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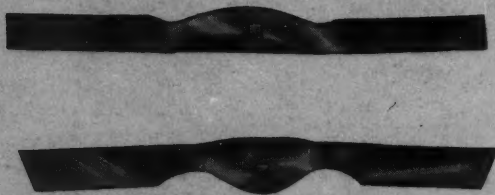
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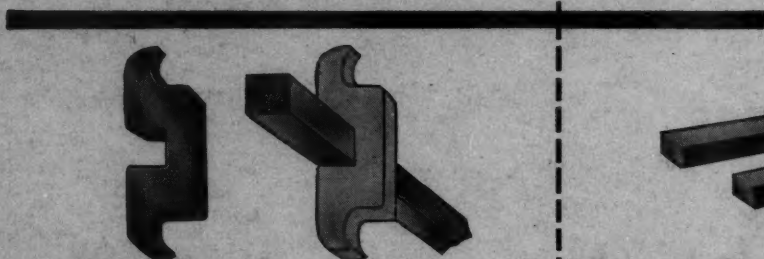


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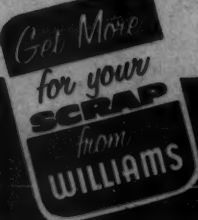


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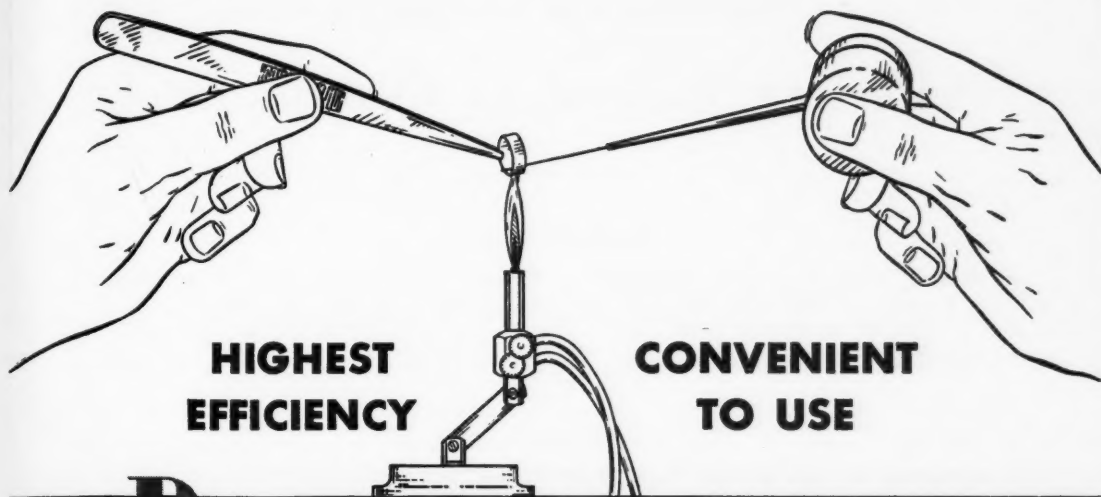
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William R. Humphrey, Denver, Colorado, president of the American Association of Orthodontists, 1960-1961

American Journal
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VOL. 46

AUGUST, 1960

No. 8

Original Articles

MAKING FORM FUNCTION

BENJAMIN L. SPECTOR, D.D.S., HARTFORD, CONN.

INTRODUCTION

WEINBERGER,¹ in his historical résumé of the evolution and growth of orthodontics, states: "The evolution of the concept of normal occlusion of the teeth is a fair index of the evolution of orthodontics as well as of dental science." Relating the advancement of orthodontic therapy with concepts of normal occlusion is, for me, a correct and natural attitude since it represents the specific area to which our therapeutic goals are directed. Obviously, we cannot treat what we do not know, any more than those who first observed occlusion could describe occlusal relationships beyond the limited knowledge at their disposal. Accordingly, from the time of John Hunter (1771) to the publication of the seventh edition of Angle's *Malocclusion of the Teeth* in 1907, the description of tooth and arch relationships became more and more advanced and detailed but remained basically a morphologic, static concept. This static approach in describing occlusion in a purely anatomic sense is illustrated in Angle's definition of normal occlusion,² "as being the normal relations of the occlusal inclined planes of the teeth *when the jaws are closed*" (italics mine). Along with this, the positions of the teeth in each dental arch and the relation of each tooth with that of the opposite arch were described. This included a highly detailed description of the relationship of cusps, grooves, inclined planes, and marginal and developmental ridges. This arrangement of the teeth, referred to as "normal occlusion," was and still is regarded as the standard for the relating of the positions of the teeth and their arches. It was quickly appreciated, however, by such men as Milo Hellman³ and A. LeRoy Johnson⁴ that this standard of

This thesis, which was given as a partial fulfillment of the requirements for certification by the American Board of Orthodontics, is being published with the consent and the recommendation of the Board, but it should be understood that it does not necessarily represent or express the opinion of the Board.

occlusion was subject to interpretation and variation with reference to the individual. Nevertheless, it seemed to be the positions of the teeth themselves, with the jaws closed, that represented the diagnostic basis of abnormality and the therapeutic goal of attainment for the whole of orthodontic procedures.

During the past few decades, it has become increasingly apparent that the concept of occlusion, if it is to become a meaningful clinical entity, must embrace more than the occlusal relationship of the teeth themselves. The teeth became a part of a *masticatory system*, and the relationship of the teeth to the system imposed a need to look beyond the dentition itself; the nerves, muscles, jaws, and joints began to take their place as a part of this functioning unit. With this increased scope, the term "occlusion" began to have more implications than ever before. The direct anatomic relationship of tooth crowns was projected to include the entire jaw relationships, the temporomandibular articulation, the muscles of mastication and head posture, and the neuromuscular system that activated the entire framework. The interrelationship of these factors produced a new series of clinical evaluations which attempted to reflect the physiologic status of the occlusion in a functional and dynamic sense superimposed on the purely anatomic or morphologic relationships of tooth crowns and dental arches. Several of these functional evaluations which have a direct bearing during all phases of orthodontic treatment are (1) centric relation of the jaws and centric occlusion of the teeth, (2) mandibular movements, (3) condylar movements and temporomandibular joint status, (4) interocclusal clearance, and (5) habits.

I doubt that the foregoing clinical considerations are represented consistently in a typical evaluation of orthodontic patients. Although orthodontists have recently given much lip service to the functional aspects of treatment objectives, there has been little or no clinical impact as to what they are and how they are to be achieved. It is my purpose in this article to indicate, on a positive clinical basis, the paramount importance of the consideration of these functional relationships in the diagnosis, active treatment, and finishing phases of orthodontic therapy and, perhaps, in some small way, to show how they can be achieved.

FUNCTIONAL CONSIDERATIONS IN THE DIAGNOSTIC PHASE

Centric Relation of the Jaws and Centric Occlusion of the Teeth.—The centric relation of the mandible is a postural relationship that is maintained while the mandible traverses an arc of closure and opening without translatory movements of the head of the condyle. It is a reflection of a balanced neuromuscular system coordinating the function of the muscles, nerves, and temporomandibular joints with mandibular posture. When the terminal closure of the mandible occurs, centric relation occlusion is said to exist. The important point is that the termination of centric relation arch closure and optimum intercuspatation should occur simultaneously, with no premature or interfering occlusal contacts. When an interfering occlusal contact exists, so that part of one tooth comes into contact with part of another tooth before the closing movement has been completed, the mandible may move into another relationship

which permits closure without this interfering contact or group of contacts. This position, differing from the terminal closure path of centric relation, is called a "convenience" or "habitual convenience" relationship. It is brought about by a neuromuscular response initiated by proprioceptive nerve endings in the periodontal membrane designed to protect the supporting structure of the tooth from undue stress that would be brought to bear on a single tooth supporting the masticatory stroke. Its net effect is to put the mandible, at final closure, in a position different from that which it would ordinarily assume in centric occlusion. With the mandible in convenience relationship, the muscles of mastication and position are not in balance. There may be strain on the temporomandibular articulation, and the teeth themselves may still receive undue occlusal and lateral stress because all cuspal contacts are out of balance. It is important to emphasize at this point the fact that the creation of a convenience relationship is a neuromuscular response, on the reflex level, to an occlusal interference. Thus, the patients themselves are unaware of the situation and can offer no direct help in the evaluation of this clinical entity. In the diagnostic phase of treatment evaluation it is the responsibility of the orthodontist to suspect a possible convenience relationship, for the evaluation and resolution of interfering occlusal contacts that produce a convenience relationship at the beginning of treatment of malocclusion will provide a more realistic goal for treatment objectives. Usually the orthodontist plans his efforts for desired tooth movement according to his view of the malocclusion with the teeth in contact. If this is not that of centric relation occlusion, then from the beginning the orthodontist's view is distorted, depending upon the degree and direction of the displacement of the mandible from its physiologic centric relation closure. A critical awareness of the possibility of mandibular displacement will allow the orthodontist to evaluate mandibular position more accurately and plan the functional objectives in harmony with the esthetic goals.

The mandibular displacement brought about by interfering occlusal contacts during centric relation occlusion may result in shifts of the mandible into a protrusive, retrusive, medial, or lateral displacement. It is also important to realize that there may be no shift of the mandible when the interfering contact is small enough. As Thompson⁵ states, these teeth will not adjust away from their position but will only exhibit jiggling or soreness. In any case, the starting point of the diagnostic phase of treatment planning is the evaluation of centric relation closure in an effort to determine whether or not the malocclusion represents the muscular equilibrium present in centric relation closure and to be present in the finished case. The first step in this analysis brings us to the second of the clinical physiologic considerations previously listed—mandibular movements.

Mandibular Movements.—The first step in the analysis of eccentric jaw closure is the observation of the opening and closing movements of the mandible and the relating of the movements observed to the midsagittal plane of the head. It is also necessary to note the midline relationship of the malocclusion

when the jaws are closed and when they are open. Additional information may be gained by observing the mandible during speech and swallowing. During these movements, the mandible should traverse the area involved in a smooth, regular manner. Any lateral deviation of the chin point should be noted, as well as the point in the excursions at which any deviation takes place. When such lateral deviation of the mandible is noted, a pathologic convenience relationship of the mandible should be suspected. These asynchronous movements of the mandible in the sagittal plane are the result of a disturbed neuromuscular balance brought about by the forced convenience relationship. This may also reflect itself in disturbances within the temporomandibular joint, which will be discussed later at greater length. More frequently, muscle spasm, with consequent erratic movements of the mandible, will be the most obvious objective finding. At this point, the operator should make an attempt to find the location of the centric relation arc and to determine at what point the mandible, in its closing movement, is forced away from centric relation occlusion. Many techniques are described and many opinions are written about obtaining centric relation position and relieving the occlusal contacts that interfere with centric relation occlusion. Shore⁶ has written an excellent text which covers this subject in great detail. All techniques basically point toward obtaining a relaxed natural closure of the mandible with neither forced retrusion nor forced protrusion. No special apparatus is required, particularly in the case of a child with a natural dentition. Experience and judgment are the most important factors here, regardless of the particular technique employed. When the patient has been trained to record an unrestrained centric relation arc, the very first point of contact when the jaw closes is noted. At this point a wax bite may help locate the first premature contact. I use strips of 30 gauge casting wax adapted over the occlusal and incisal surfaces of the teeth. The patient is told to close his jaws in the previously obtained centric relation arc until the first point of contact is made. Then, the patient is asked to tap his teeth lightly together several times on this point. When the wax strip is removed, the prematurity is shown as the only perforated area in the wax bite. This contact area is stoned very lightly. The procedure is then repeated and the patient's reaction is noted. When one area of premature contact is removed, another may appear in a different part of the mouth. As these are removed, the areas of contact will become greater and greater. It will also be noted that the patient's reaction to the removal of premature occlusal contacts is quite prompt. Habitual convenience relationship closure is abandoned very quickly, particularly in the case of a young patient. It is not the purpose, at this time, to try to equilibrate the occlusion completely. The main objective, at the diagnostic stage, is to arrive at an unrestrained centric closure. When this has been done, the clinician is now on sounder ground for evaluating the desired objectives of tooth movement. The inclined-plane relationship of the buccal segments at this stage may have changed slightly from that which previously existed at the time the original models were made. If a slight rotation of the mandible has occurred, the midline relationship will have been altered. In any

case, the occlusal position of the malocclusion under question will be a more accurate orientation from which to evaluate tooth movement and functional objectives.

It must now be stated that many malocclusions observed at the diagnostic stage will not be subject to recording of centric relation or occlusal adjustment. Teeth in total cross-bite relationship are obviously not susceptible to occlusal or incisal adjustments. Sagittal deviations of the mandible that are due to cross-bite are almost immediately apparent as such. In other cases, areas of premature contact may be such that they form the basis or part of the basis for the orthodontic treatment and cannot be adjusted by grinding. In any case, the important point at this time is that the orthodontist is made aware of centric relation closure and whether or not it exists at the time of diagnosis. With this in mind, the implications of the centric relation position will be projected into the active treatment phase. This will be discussed in the section dealing with functional considerations during active treatment.

Condylar Movements and Temporomandibular Joint Status.—In the normal opening and closing movements of the mandible, the temporomandibular joints move in a smooth, coordinated fashion. In the presence of habitual convenience relationship of the mandible, the disturbed neuromuscular balance may produce a variety of symptoms in the temporomandibular joint (for example, limited mandibular movement, irregular mandibular movement, clicking, crepitation, muscle spasm, tenderness, and pain). Since these symptoms are related to the severity of pathologic occlusion and the duration of its existence, it is possible that many of our younger patients will not have manifestations of pathologic occlusion that have been reflected into the status of the temporomandibular joint. In other young patients, however, symptoms may range from mild to severe. Most writers in this field feel that pathologic occlusion is responsible for 90 per cent of the temporomandibular joint problems that are seen. Since the prognosis for successful treatment is related directly to the duration of the trauma, it is of critical importance that the clinician look to the status of the temporomandibular joints when pathologic occlusion exists. Stethoscopic examination of the joints may be necessary, for some clicking and crepitus may not be audible to the operator. Shore⁶ describes three types of clicking noises that may occur during opening movements of the mandible: (1) the opening click associated with a retrusive mandibular relationship; (2) the intermediate click which may be associated with a mandibular protrusive relationship, medial or lateral shifts of the mandible, or increased vertical relationship, and (3) the final click which occurs in full open position. There are many theories as to the causes of the clicking noises.⁶ In general, the clicks are associated with asynchronous, uncoordinated movements of the condyle, meniscus, and external pterygoid muscles and temporal muscles.

Interocclusal Clearance (Freeway Space).—When the mandible is in rest position, there is no occlusal contact between the maxillary and mandibular teeth. The space between the upper and lower teeth in this position is usually referred to as the interocclusal clearance or freeway space. Usually there is a 2

to 4 mm. clearance between the anterior teeth. Since the rest position is a reflection of the equilibrium of the tonus of the jaw-opening and jaw-closing muscles, it is a postural relationship that varies according to the state of tonus of these muscles and the position of the head. Therefore, the registration or measurement of interocclusal clearance is clinically uncertain and not susceptible to precise measurement. This is particularly true when one attempts to determine the space present between the posterior teeth. As in many other clinical procedures, however, constant evaluation and experienced application of relatively crude techniques can yield meaningful clinical interpretations.

In my office, the rest position is determined by having the patient repeat the letter "M" over and over. I also use the words "Mississippi" or "Massachusetts." While the patient is repeating the given word or letter, I very lightly draw back one side of the mouth without inserting a finger inside the mouth. At other times during this procedure I quickly and lightly draw the lips apart from the anterior teeth. This procedure is repeated many times until I feel that the patient is relaxed and that my finger movements are not disturbing normal resting mandibular position. When this is the case, a visual measurement is made of interocclusal clearance anteriorly and posteriorly. Recently, I have been using the lateral cephalometric roentgenogram for determination and measurement of rest position. With this technique, the patient is placed comfortably in the head positioner, and again the patient is oriented by pronouncing the letter "M" or the word "Mississippi" over and over. Then the patient is told to keep the mandible in the position that is obtained at the end of pronouncing the letter "M" or the word "Mississippi." At this moment, the roentgenogram is taken. In the developed film the interocclusal clearance is easily seen posteriorly and anteriorly as the dark space between the teeth. The critical shortcoming in this technique is, obviously, that one is not sure that the position represented in the lateral x-ray film is, in fact, that of physiologic rest. Again, however, clinical experience and judgment in the application of this technique reduce error. The importance of recording rest position measurements at the beginning of treatment lies in the fact that it is a guide to the amount of increase in vertical dimension that we may obtain during treatment and reasonably expect to retain after treatment. If the freeway space is eliminated during the course of treatment in an attempt to obtain a reduction of vertical overbite, the rest position is eliminated. This results in continuous tension of the muscles of mastication with undue and constant stress on the teeth and supporting structures. This will lead to collapse of the improvement in vertical overbite relationship. If collapse of the increased vertical dimension does not occur, the continued trauma will result in the breakdown of the supporting structures of the teeth or the temporomandibular joint.

Habits.—The consideration of oral habits is a routine necessity in evaluating the malocclusion at the diagnostic stage. However, several oral habits usually associated with interfering occlusal contacts may be overlooked at this stage. They are unilateral mastication, perverted swallowing, and grinding and clenching of teeth during the waking hours or during the sleeping hours. These

are all the result of an unconscious attempt to avoid premature contact. Unilateral mastication may be the result of avoiding premature contact of sensitive teeth. There may be loose deciduous teeth, teeth with high fillings, or deciduous teeth that are being exfoliated in unusual positions. This may also cause the patient to place the mandible in unusual positions for swallowing. In some cases, this may result in swallowing with the teeth altogether out of contact. The continuation of this situation for a time will result in the formation of an unconscious habit.

FUNCTIONAL CONSIDERATIONS DURING TREATMENT

It is unrealistic to assume that during the course of active tooth movement groups of posterior teeth will all fall automatically into the precise relationship that characterizes centric occlusion. This is particularly true with the use of multibanded appliance techniques, which do not allow for the passive positioning of teeth responding to the forces of occlusion and surrounding musculature. Accordingly, the functional considerations previously noted during the diagnostic and treatment-planning stage of treatment must be carried over as an important clinical aid during the active treatment phase. As treatment progresses toward the desired goals, it must be affirmed and reaffirmed that the positions of the teeth are not disguised by transitory jaw relationships which may lead the clinician astray with regard to the actual status of tooth movement and tooth relationship at any given point in treatment.

The production of a dual bite is, by now, a generally appreciated phenomenon that may occur with the use of Class II intermaxillary elastics or anteriorly inclined bite planes. This factor by no means discounts the use of these elastics and bite planes in orthodontic therapy but accentuates the need for careful observation of functional status during their use. The relief of minor transient occlusal and incisive disharmonies during the course of tooth movement may prevent occasional temporomandibular joint trauma and keep the status of centric relation more susceptible to accurate assessment. Obviously, no attempts at extensive occlusal equilibration should be made in the active phase of treatment. The constant awareness that "things are not necessarily as they appear to be," however, will minimize the possibilities of treating the patient into an undiagnosed traumatic convenience relationship. Brodie⁷ mentioned, in a discussion at the First Margolis Lecture Series, the observation that Class II cases never seem to be *more* than Class II. The possible reason given for this seemed to be connected with a neuromuscular response that moved the mandible forward in closure so that the inclined-plane relationship, characteristic of total Class II, was maintained but not exceeded in severity. This may explain the apparently refractory Class II case that suddenly seems to begin to respond to distal movement. The mandible is moving distally with the upper teeth, so that the Class II relationship is maintained. As muscular equilibrium is achieved, the distal movement of the mandible stops. From this point on, the continued upper distal movement is reflected in a change in the inclined-plane relationship of the upper and lower teeth.

As the terminal stages of active tooth movement are reached, the need for careful functional evaluation increases. Convenience relationships may be more subtle. Careful observation of jaw closure and opening will bring to light prematurities that may be responsible for possible misinterpretation of final tooth positioning. The type and degree of interference will determine, at this point, whether minor selective grinding or additional tooth movement is indicated.

The observation of available interocclusal clearance must be made throughout treatment, particularly in those cases in which bite opening is being attempted with bite planes. The desired amount of vertical overbite reduction in a given case is ascertained on the basis of the functional requirements arrived at in the treatment-planning stage. If this decrease in overbite is accomplished by the intrusion of anterior teeth, then the interocclusal clearance factor is not significant except, of course, that it will be increased anteriorly. If the decrease in overbite is accomplished by the increased eruption of posterior tooth segments, then the status of interocclusal clearance will be a critical factor for its successful maintenance. These requirements are best realized early, so that treatment may be planned accordingly.

In general, it may be said that functional factors that demanded re-evaluation from the diagnostic standpoint are noted early in the active treatment stage. In the later stages of active treatment, functional analysis is used as a mechanism for the more precise evaluation of the status of occlusal relationships.

FUNCTIONAL CONSIDERATION AT THE CLOSE OF ACTIVE TREATMENT AND DURING RETENTION

The application of functional analysis to a finished case is the culmination of all the procedures previously outlined. Shore⁶ recommends the removal of interfering contacts in centric relation during the first month of the retention period. This is rechecked in one month, at which time the eccentric ranges of articulation are examined. If necessary, gross occlusal interferences in these lateral excursions are removed. In four to six months, centric and excursive ranges of articulation are equilibrated as much as is possible in the given case.

Ideally, the functional considerations at the termination of active appliance therapy and at the beginning of the retention stage are merely a reaffirmation of the principles outlined in the diagnostic phase. Some slight selective grinding or reshaping might be necessary to compensate for settling of the teeth after appliance removal. In some cases, when vertical overbite is very small it is possible for the teeth to equilibrate themselves during settling.

Unfortunately, many finished cases represent a compromise result. It is this situation that makes the most demands upon the operator's ability to produce optimum functional harmony in the presence of nonideal occlusal relationships. Deviation from the ideal occlusal and incisal relationship may be a result of many factors; discrepancies in tooth size, asymmetries, premature loss of teeth, atypical or unpaired extractions, and congenital absence of teeth will usually call for selective compromise on the part of the orthodontist. An atypical inclined-plane relationship which usually accompanies such compromises must be carefully equilibrated at the close of active treatment in order to minimize premature contacts and occlusal trauma, which are more likely to

exist in this type of case than in an ideally finished one. As in the diagnostic phase, this will require judicious selective grinding based on the observations of mandibular movements, centric relation, and excursive movements. This will include the use of wax bites and marking paper and any other techniques that will increase functional harmony, since the goal at this time will be to obtain the maximum equilibration that the case permits. Under these conditions, the settling that occurs during the first few months after band removal will be physiologic rather than traumatic.

The handling of the overjet-overbite relationship is a consideration not previously brought out since it is not, of itself, a dynamic functioning entity. It has very important functional implications, however, and must be evaluated carefully at the end of active treatment. When it is necessary to finish a case with overbite still present, compensations in horizontal overjet are necessary. A deep vertical overbite in combination with a small or negligible overjet will severely impair lateral and protrusive mandibular excursions with constant trauma to the upper anterior teeth. It may be important to consider, in finishing deep overbite cases, the possibility of continued growth at the head of the condyle. It is my clinical impression that some cases in which change has occurred, resulting in slight crowding in the lower anterior region and slight spacing in the upper anterior region, may be a reflection of continued condylar growth with insufficient overjet to accommodate the forward change in position of the mandible. Under these conditions, the deep overbite acts as a barrier to forward movement and mandibular excursions. I feel that the acceptance of slightly more overjet would allow for this contingency and result in a more physiologic relationship in the later adult dentition. It may be argued that late growth changes at the head of the condyle would also affect the vertical overbite favorably, making the allowance of overjet unnecessary. This would be in accord with Diamond's⁸ view of the development of dental height. In an unpublished investigation⁹ done at Columbia University in 1950, however, the findings tended to point toward the lack of significant relationship between skeletal morphologic measurements and vertical overbite. This tended, also, to support Wylie's¹⁰ findings in regard to lack of correlation between ramus height and overbite. Although not conclusive, it appears, then, that the vertical overbite that exists at the end of treatment will probably be unchanged by growth.

CASE REPORTS

The following cases have been selected to illustrate some of the observations and procedures discussed in this article.

CASE 1.—Patient J. H. is a 16-year-old girl with a Class II, Division 2 (Angle) malocclusion (Figs. 1 to 5). Both temporomandibular joints are tender, crepitus accompanies all mandibular movements, and a discernible click occurs when the wide-open position is reached. The upper midline is in harmony with the midsagittal plane of the face.

The spastic, asynchronous movements of the mandible, coupled with painful clicking of the temporomandibular joints, are the result of a prolonged pathologic occlusion. As suggested previously, it would be unwise to assume the closed position to be that of centric occlusion; in view of the nature of the mandibular movements and the temporomandibular

joint status, it would be impossible to evaluate the centric relation position at all. The plan of treatment here would be determined by the response of the mandible and the temporomandibular joints to the initial relief of the severe functional impairment.

CASE 2.—The case of Patient D. C. illustrates the type of transitory convenience relationship that may indicate a more desirable interdigitation of posterior teeth than that which

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 1.—Case 1. Photograph showing the jaws in the closed position. The midline position is emphasized by vertical black lines. Note that the upper midline is in harmony with the midsagittal plane of the face.

Fig. 2.—Case 1. The slightly-open position of the jaws. Note that the position of the jaw, as indicated by the midline relationship, is moving laterally to the left in the initial movements of jaw opening.

Fig. 3.—Case 1. The wide-open position of the jaws now shows a lateral deviation across the midsagittal plane to the right side. Pronounced clicking in both temporomandibular joints occurred just prior to this position.

Fig. 4.—Case 1. The patient is now pronouncing the word "Mississippi." Jaw position is slightly to the right of the midline. There is a 5 to 6 mm. interocclusal clearance posteriorly.

Fig. 5.—Case 1. The patient is now saying "Mississippi" again. The mandible is slightly more to the right than in Fig. 4.

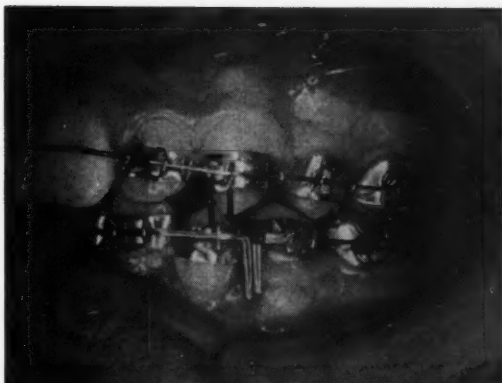


Fig. 6.

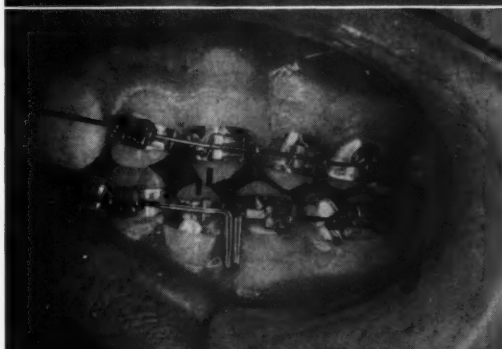


Fig. 7.

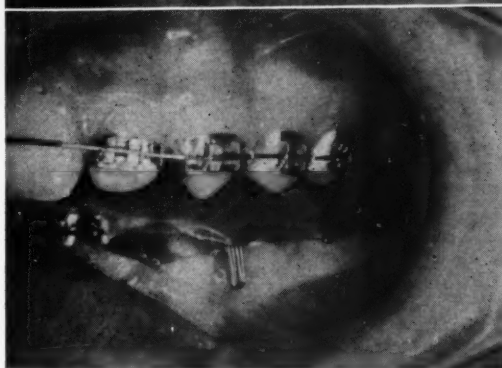


Fig. 8.

Fig. 6.—Case 2. The "closed" position of the jaws of a patient undergoing treatment. The inclined-plane relationship of molars, premolars, and cuspids suggested that ideal cuspal interdigitation had nearly been attained. It was suspected, however, that this position was a convenience relationship, since a very slight mesial shift of the mandible was noted at the very end of the closing movement.

Fig. 7.—Case 2. The first point of contact obtained in the centric relation arc of closure. Close observation indicated that the jaw moved forward from this position to that shown in the previous figure. At this point, the inclined-plane relationship suggests that much more treatment would be necessary than that indicated in Fig. 6. At this photographic angle, the differences are particularly apparent by the cuspid relationships, emphasized by dark lines.

Fig. 8.—Case 2. The wax bite is used to locate the point of premature contact. This is 30 gauge green casting wax adapted over occlusal surfaces of the teeth. Centric relation arc closure is registered until contact is made. The jaws are tapped together several times for emphasis.

really exists (Figs. 6 to 11). If it had not been resolved, the patient could have been treated into an undiagnosed convenience relationship. When the convenience relationship was resolved, it was apparent that more treatment would be necessary to bring about ideal cuspal relationships.



Fig. 9.—Case 2. The wax bite. The perforated area indicated by the arrow represents the first point of premature contact.



Fig. 10.

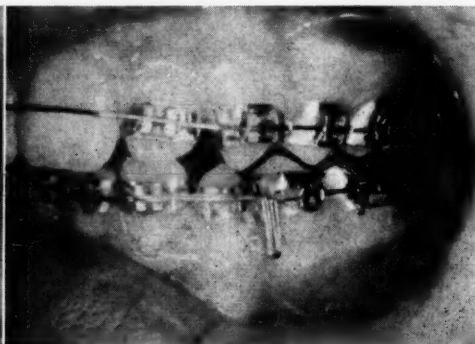


Fig. 11.

Fig. 10.—Case 2. The premature contact on the wax bite is represented by the distolingual cusp of the maxillary left first molar. This is stoned very lightly.

Fig. 11.—Case 2. The position of closure after the interfering contact has been removed. Although it is not too apparent here, the cuspal relationships are much less ideal than that in Fig. 6, with the mandible in a slightly more retrusive relationship.

CASE 3.—Patient J. D., a 7-year-old child, had a cross-bite of the entire right buccal segment (Figs. 12 to 14). Because of the favorable pattern of mandibular movements when the teeth were not in occlusion, it was felt that this patient might respond to selective grinding of the maxillary and mandibular right deciduous cuspids. The patient did not respond to the selective grinding procedure, however, and bilateral expansion of the maxillary buccal segments will be used to correct the cross-bite relationship. The wear pattern of the cuspids will still have to be adjusted after therapy, so that harmonious excursive movements will continue throughout the remainder of the mixed-dentition period.

SUMMARY

This article represents an attempt to point up and illustrate some functional implications inherent in orthodontic diagnosis and treatment. It is felt that many of these considerations frequently may be overlooked, to the detriment of sound diagnosis and treatment planning and evaluation of treatment and finishing procedures. Centric relation and occlusion, mandibular movements, condylar

movements, and temporomandibular joint status, intermaxillary clearance, and occlusal habits are described in relation to the diagnostic, active treatment, and finishing phases of orthodontic procedures.

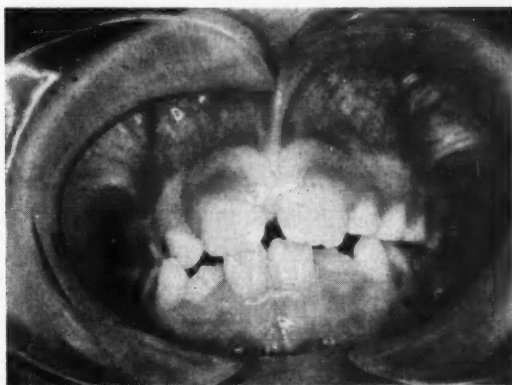


Fig. 12.



Fig. 13.

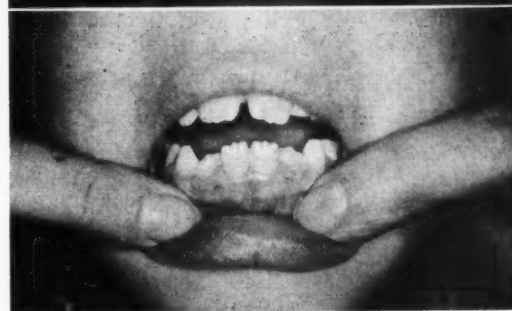


Fig. 14.

Fig. 12.—Case 3. The closed position of the jaws of a 7-year-old patient with cross-bite of the entire right buccal segment. Note the midline discrepancy. Note also the difference in the wear pattern of the right and left maxillary cuspids as a result of the unilateral excursions dictated by the cross-bite.

Fig. 13.—Case 3. As the patient begins the opening movement, the mandible shifts to a position harmonious to the maxillary midline and the midsagittal plane of the face.

Fig. 14.—Case 3. The patient's mouth is now half-open, the midline relationship is still harmonious, and the mandibular movements are smooth.

CONCLUSIONS

1. Orthodontic ideals of morphologic perfection are of value only in so far as their attainment is consistent with sound functional principles.

2. The functional requirements of the dentition should be noted, and their recognition should be made a routine clinical procedure during all phases of treatment.

3. In many cases, the morphologic ideal is not attainable under any circumstances. In other cases it cannot be attained coexistent with a harmonious functional pattern. In any case, a sound, physiologically healthy, functioning dentition should be the main objective in orthodontics. In most cases the esthetic improvement will accompany this goal as an important by-product.

4. Some feel that the handling of these discrepancies from the functional standpoint belongs more properly in the hands of the family dentist or periodontist. If function is, in fact, a goal in orthodontic procedures, I feel that the orthodontist, who has treated, observed, and evaluated his patient on a continuous dynamic basis, is the most eminently qualified to perform the task of coordinating the morphologic result in harmony with sound functional principles.

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A SURVEY OF RADIATION HAZARDS IN ORTHODONTICS

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INTRODUCTION

IF A man will begin with certainties, he shall end in doubts, but if he will be content to begin with doubts, he shall end in certainties." In this bit of prose Francis Bacon clearly says that man is never to be permitted to become complacent in his ever-changing environment. We are in an age of technological development wherein we are continually finding new facets to old problems. In some instances, these make the span of life longer and more enjoyable but, conversely, sporadically frighten us in our search for security from both physical and environmental conflicts. Frequently, discoveries which seem originally to ease our burden oddly enough become agents of our destruction.

We are all familiar with the results of the well-planned experimentations of the German physicist, Wilhelm Roentgen who, armed with a tube capable of producing gamma rays, discovered that its emissions had the power to penetrate tissue and bone with enough energy to sensitize a crude photographic plate. Roentgen, being a man of intellect and foresight, was immediately aware of the potential of this discovery and exploited it into the diagnostic and therapeutic aid that it is today.

It has been interesting to uncover outdated publications depicting the use of the x-ray to satisfy the morbid curiosity of pleasure seekers. The viewing of one's own bones evidently carried quite an emotional impact in the 1890's when the public was unaccustomed to the many phenomena that we take for granted today. At this stage of development there was little indication that this strange new force would harbor a lethal potential. As a matter of fact, Roentgen's new machine generated tremendous journalistic excitement. The press and literature of the time contain a definite dichotomy of opinion—a little truth and a great deal of fantasy. The medical profession, enamored of this tool, pursued a course of experimentation with little regard for the patient. Some unsuspecting medical students were even used as guinea pigs for a stimulating project in which roentgen rays were used to reflect anatomic diagrams directly into their brains in the hope that this would make a more enduring impression than did ordinary methods of learning.

The Electrical Engineer, in 1896, carried this decidedly startling report: "To add to the many attractions of their large establishment, Bloomingdale

This thesis, which was given as a partial fulfillment of the requirements for certification by the American Board of Orthodontics, is being published with the consent and the recommendation of the Board, but it should be understood that it does not necessarily represent or express the opinion of the Board.

Brothers have recently opened an x-ray exhibition. A few words as to the details of this apparatus may be of interest. The coil is an 8" splitdorf with a make-and-break circuit mounted on the shaft of a motor. The tube is a focusing target made by Greuner of this city." An enthusiast who goes down in history as Mr. Hawks then adds his testimonial: "By careful manipulation I am able to make a clear photograph of the hand in from 20-30 seconds exposure and a picture of the rib-cage in from 10-15 minutes." Hawks first experienced redness and then dryness of the skin, his nails stopped growing, his vision became impaired, and his hair fell out. It was said that Mr. Hawks failed to respond to medication.

Subsequently, it was discovered that while sunlight burned, its action was superficial, whereas x-rays, being of shorter wave length, penetrated deeper and caused sloughing and destruction of subcutaneous tissue. Statisticians have stated that well over 100 of the early x-ray workers succumbed to radiation energy before its lethal aspects were recognized. It was in the early 1920's that British assurance companies began casting a jaundiced eye upon the roentgen-ray worker as a bad risk, and statistics prove that he had a materially shorter life expectancy than the general population.

In 1920 a committee was formed, and three years later the first recommendations were drawn for the protection of the x-ray technician. Among the things suggested as likely to be helpful were light and airy quarters painted in colors agreeable to the eye, with the rooms large enough to allow ample movement. Ventilating fans were to be installed to ensure free circulation of air. It was also suggested that the technicians take the precaution of avoiding direct radiation from the machine. Lead partitions were to be used as additional protection, and standards were set up as to their thickness.

Finally, in 1928, the Second International Congress of Radiology gave us a unit of measure which accurately indicated the amount of radiation being liberated by a given machine at a given time. This unit of measure was termed the roentgen or "r."

One must review the way in which the x-ray is produced electrically to understand properly the difficulty that the scientist had in developing the r as a unit. When a filament is heated from a direct current source, and if a vacuum exists in a tube, a stream of high-speed electrons will be emitted from the filament. These electrons, negatively charged, are propelled at a high speed to the anode by a high-voltage current directed into the circuit. The complete circuit includes (1) the high-tension circuit and (2) the filament circuit. The anode is generally tungsten and deflects the electrons as a mirror reflects light. The contact of the electrons on the anode creates heat and energy in the form of waves of extremely small amplitude and high frequency. The magnitude of the negative-charge electrons emitted at any point in the circuit can be measured in amperes. Increasing the filament current supplies a greater quantity of electrons. The high voltage directed across the circuit determines the speed with which the electrons are propelled into the target. This is measured in volts. Therefore, the voltage will determine the penetration or hardness of the

x-ray delivered. The target receives more radiation per second if the amperage is high and the voltage is low than if the opposite situation were true. Therefore, since in x-ray photography the radiation must pass through the tissue to expose the plate, high voltage should make it possible to shorten exposure time.

The r meter is a simple air condenser of known volume. When the condenser section of the meter is radiated, a charge remains therein as a result of the electromagnetic quality of the energy. The condenser may be then discharged into a galvanometer calibrated to be read in terms of the r. Hence, the r shall be the quantity of x-radiation such that the associated corpuscular emission per 0.001293 grams of air produces in air ions carrying one electrostatic unit of quantity of electricity of either sign; 0.001293 grams of air equal 1 c.c. of air at 0° C. and 760 mm. of pressure.

With the onset of World War II and the entrance of the United States Government into the Manhattan Project, many who had been only casually interested in radiation became acutely interested for their own personal protection, if for no other reason. They also were forced to evaluate the effect of radiation which the product of their efforts would liberate in New Mexico and, ultimately, on the people of Japan.

Basic research now began to progress at a rapid rate. If radiation damage could be placed upon a cellular level wherein it could be said with some degree of certainty that "X" amount of radiation would do "Y" amount of damage to a normal healthy cell, it would then be possible to establish a criterion for permissible radiation dosage.

Effects of radiation roughly resemble the action of the ultraviolet section of the spectrum. Small exposures can produce erythema, and if proper conditions prevail some tanning will be produced. If the x-ray exposure exceeds this erythematous dose, the stratum germinativum may be injured and subsequent healing will result in the formation of scar tissue.¹

A great deal of effort has been expended in assessing the hematopoietic damage to various laboratory animals, but one would be justified in questioning the precision of this type of experimentation as applied to human beings. As it happens, however, the following study has not been limited to animals. There have been a few unfortunate accidents in which human beings have been exposed to considerable radiation. Happily for history, men of science were on hand adequately to care for these victims. Sensing an unrepeatable opportunity to collect heretofore unattainable material, the scientists made a concerted effort to collect pertinent data. Complete blood pictures were recorded from the time of the accident to dismissal from the hospital and subsequently for a few years after recovery.

Hematopoietic damage is evident in human beings even after low exposures. The peripheral blood picture changes after radiation; the white count will decrease from the normal, but the degree of depression increases as the radiation exposure is increased from a small dosage to that approaching the lethal limit. If the radiation is severe, the white count will stay depressed for several weeks. Small dosage will permit a slightly more rapid recovery. The red cell appears to be more resistant, but severe radiation will result in delayed

damage (possibly within two or three days). After two or three weeks a general recovery is made. It appears, however, that the most sensitive indication of radiation damage is the abnormal excretion of amino acids, which is noted as early as twelve hours after exposure. This elevated excretion may last as long as five months in some cases.²

Some researchers have stated that the platelet count probably could be used as an index of the quantity of radiation suffered, since the severity of the dose seems to influence the depression in direct proportion. Interesting as this might seem, it represents dosages too near the lethal limit to be applied in everyday experiences, and one cannot apply the evidence to ordinary human exposures which, fortunately, come in minute quantities. It is felt by some workers, however, that x-ray damage is cumulative and when the total dosage approaches the quantity that would cause tissue damage, regardless of the passage of time, irreparable destruction is likely to ensue.³ Repeated small doses to the head have caused cataracts, as evidenced by some of the early cyclotron workers who adjusted their machine through an inadequately shielded window.

Recent events are forcing entry into the biologic and chemical life of the cell, the secrets of which Nature has guarded since the beginning of time. The physicists and biologists seem to have the key in the door. They are even beginning to talk about the effects of ionizing radiation upon the body of the cell and its nucleus. It is believed that when radiation penetrates any material a considerable amount of energy is liberated. The premise is that this energy excites or ionizes the molecules in the material radiated. This not only produces heat but augments the electronic energy of the molecules. The evolution of changes brought about by radiation from the time the molecule is ionized or energized to emergence of its complete end product is now under consideration. It is felt that this activation of the molecule may not necessarily be permanent. However, there seems to be a sequence of activity from the initial contact of the radiation to the end product which takes only a fraction of a second and can be divided into three separate events with a fourth, or longer stage, in the case of living matter.

In the first stage of cell ionization, called the physical stage, the radiation imparts its energy to the molecules, thus yielding ionized atoms and electrons. The second, or physical-chemical stage, results in *some* of the molecules becoming stable in their new electrical environment, while the remaining molecules in the area become chemically unstable and are called the "free radical molecules." A third chemical stage now begins in which these free radical or chemically unstable molecules react upon one another, producing their final chemical end products. In living tissue these three stages last 10^{-13} , 10^{-11} and 10^{-6} seconds, respectively. In biologic systems a fourth stage follows which can last from days to years. In this fourth stage the tissue reacts to the chemical end product left at the termination of the third stage. Therefore, it is now assumed that the primary site of radiation injury is in the cell, and that the cell is damaged not only by direct radiation contact but by the chemical end products of the action.⁴

Evidence accumulated over the years proves that heat, chemicals, and radiation have a mutant effect upon the genes of fruit flies and other insects and animals. Why not, then, upon human beings? A mutant somatic (body) cell affects only other somatic cells of the body and therefore cannot be passed on to the next generation, but radiation is capable not only of cellular destruction but also of large-scale disruption of genetic material. If either the sperm or the egg cell is mutant, the result (usually deleterious) will be inherited by the offspring. Many times the next immediate generation will not be involved phenotypically, and yet the genotypic damage may affect every single one of its descendants. It is misleading to reiterate the thought that harmful effects of radiation might be regulated by adherence to a rate of exposure which the tissue will tolerate when one considers the effect of radiation upon the future generations as the result of gene mutation. It seems, then, that one must be guided by the premise that *any* radiation to the gonads is harmful prior to and during the reproductive period. This is considered to be approximately thirty years, since the average age of a parent in the United States is 30½ years.

Because of the action of the cosmic rays of the sun, the entire human race is continually being radiated by Nature. During the first thirty years of life the rays produce about 4.3 r at sea level and more in areas where the atmosphere is less dense. Each person in that age bracket receives, on the average, about 3 r as a result of medical x-rays; this is, of course, total-body radiation. According to the records of the National Academy of Sciences, radioactive fall-out from atomic fission would add not less than $\frac{2}{100}$ r and not more than $\frac{5}{10}$ r for the thirty-year period, but some occupational hazards can increase this considerably. Scientists contend that we are all receiving naturally at least 5 r for our first thirty years.

"If mankind were to be exposed to what they call a doubling dose of an additional 5 r, we would be subject to double the existing national average of 2% of births with mutant effects. One hundred million children are expected to be conceived from parents now alive. Two million are bound to become genetic defectives at our present rate. If man-made radiation doubles the dosage, this two million will become four million, and since the mutant gene is recessive, about 10% of the tangible inherent defects would occur in the first generation."⁵

On that basis, a dose of 10 r would give rise to some 50,000 inherited defects. It must be borne in mind that the statistical extinction of mutant genes is always accompanied by tragedy.⁵

This scientific presumption is based upon animal measurement and suffers in its application to human beings. To summarize, however: We receive 5 r from Nature and average another 3 r from medical necessity, leaving 2 r to use up in other forms of radiation before approaching the so-called doubling dose, as 10 r is the danger point for the gonads.

The foregoing findings appear to be impressive, but since the National Academy of Sciences published them, several other researchers have prepared papers and without exception have revised the tolerable limits downward. Obviously, it would seem that no radiation at all should be permissible, but since

it is not possible to obtain this ideal, every effort should be made to minimize dosage. The timely question arises—insistent and disturbing: "What practical tests can be made in each man's personal profession; and what practical changes can be instigated?"

All this hits the field of orthodontics with a particularly alarming impact. It goes without saying that in a profession so beneficial to the health of our younger generation, its exponents will be vitally concerned that nothing shall threaten that health. From the parents' point of view, the question is soon bound to arise: "Is radiation necessary? If so, how much?" Newspapers have lately made household words of heretofore unknown or little-used terms such as "fall-out," "roentgen," "radiation," and others. Public interest has been shown in the amount of radiation fall-out received from the atomic testing in Nevada. National magazines have made feature stories of atomic accidents, misplaced isotopes, and disposal of atomic waste. Since our satellites have traveled to the sun, there to orbit possibly forever, cosmic radiation belts are being discussed fully in the press. All make fascinating news, and we are beginning to deal with a public aware of radiation, whether it goes by the name "fall-out," "chest plate," or "cephalometry." Recently, a nationally syndicated column was entitled "Are Our Children Receiving Too Much Radiation?" There is little doubt that every practicing orthodontist has been or soon will be asked: "Doctor, are these x-rays necessary? What do you use them for? Could you possibly get along without them?"

MATERIALS AND METHODS

I have had little difficulty in defending full-mouth x-ray pictures on the basis of their use in the discovery of congenital defects or biologic problems which would, of necessity, influence treatment. However, could we as orthodontists honestly defend our "before-and-after" cephalographs on the same basis? Consider your own case: Do you take headfilms and file them without so much as a cursory glance? Do you have your assistant examine them for case analysis instead of doing it yourself? Do you possibly note the degree of this or that angle but proceed to treat the case routinely without being much influenced by the information thus obtained? Or do you, as some do, take progress headfilms at completion of anchorage preparation, again at mass movement of teeth, and finally at termination of the case? This last method would be most helpful and efficient if it did not, unfortunately, involve the greatest amount of radiation. The other procedures mentioned do not utilize properly the information obtained by means of the pretreatment x-ray.

It should be possible, in most cases, to use the original film throughout treatment and another at the termination of treatment to demonstrate what has been accomplished.

It has become apparent not only that we as orthodontists will have to defend ourselves when our patients question the need for any additional exposure to radiation but that the various state governments, acting for the protection of the public, are at the moment interested in legislation designed to license and control the use of the roentgen ray. Such legislation, you may be sure, will be instigated at the expense of the profession.

Therefore, in the interest of protecting both the public and the specialty of orthodontics, I reasoned that a study of typical installations and their use was in order. By such a study I hoped to be able to make an honest appraisal of whether or not cephalometry is a sufficiently valuable tool to compensate for subjecting my patients to its hazards.

For the purpose then, of mitigating both the possible danger to patients and the embarrassing trend of parental inquiry just presented, I made the survey reported here. I chose at random seven x-ray installations available locally, including machines of four different makes. All units were inspected and proved to be in good operating condition; the operating personnel was adequately trained.

During the course of the survey the following types of information were obtained:

1. Measurement of radiation dose per lateral head exposure.
2. Attenuation measurements with aluminum absorbers to determine the penetrating properties of the x-ray beam.
3. Radiation-level measurements to the gonadal region of the patient.
4. Radiation checks in the x-ray room and adjoining area occupied by operating personnel.
5. In addition to radiation measurements, data were obtained on photographic conditions which influence the final quality of the radiographs obtained.

When determining roentgenographic exposure one must take into consideration three variables:

1. The amount of energy provided by the machine.
2. The degree of sensitivity of the x-ray film and, in addition, the reflective power of the intensifying screen provided in the cassette.
3. The type of developer and the method of development.

No article on radiographic technique or critique on radiation would be of much academic value without a clear discussion of these factors.

Table I covers the photographic variables.

With reference to Table I, Column 2 provides information on the type of x-ray film used in each installation. Three trade names are listed: DuPont 508,

TABLE I. FILM-SCREEN COMBINATIONS AND DEVELOPING CONDITIONS

INSTALLATION NO.	FILM	INTENSIFYING SCREEN	X-RAY DEVELOPER	DEVELOPING TIME AT 68° (MINUTES)
1	DuPont 508	Patterson Par Speed	DuPont liquid	5
2	DuPont 508 and Eastman Royal Blue	Buck Mid Speed	Commercial service	5-8
3	DuPont 508	Patterson Par Speed	DuPont liquid	5
4	DuPont 508	Patterson Par Speed	DuPont liquid	5-7
5	DuPont 508	Patterson Par Speed	Kodak liquid	5
6	DuPont 508	Buck Mid Speed	DuPont liquid	10
7	Eastman Blue Brand	Patterson Par Speed	Kodak liquid	5

Eastman Blue Brand, and Eastman Royal Blue. In this age of "Le Sabre," "Invieta," "Belvedere," etc., when manufacturers vie for striking and exclusive tradenames, one needs information from year to year as to what device, symbol, or title each company will assign to its product. It was found that DuPont 508 and Eastman Blue Brand were about equal in sensitivity, while Eastman Royal Blue proved to be approximately 50 per cent more sensitive.

Column 3 depicts the types of intensifying screen provided within the cassettes of the units tested. Generally, these manufacturers list their screens in three categories according to their reflective indices. The most efficient and the one that heads the list is termed "high-speed," the next on the table of sensitivity is "par" or "mid speed," and the least efficient is graded "definition speed." There is about a 20 per cent exposure differential between each grade and the next.

Column 4 lists the chemicals used in the developing technique. Fresh developer and proper developing temperature will enhance the quality of any roentgenographic product.

It thus becomes evident that there are practical methods of controlling x-ray dosage prior to activation of the unit.

However vital the information contained in Table I may be, our main interest was centered in the amount of energy our seven samples produced, and it was evident that some method of standardization had to be introduced, since the underlying purpose of this project was the determination of the quantity of radiation required by each unit to produce a high quality of film. I therefore decided that all comparison would be based upon the exposure required by each installation to produce a high-quality transparency for a 12-year-old girl. We then found that all but one installation had the exposure information expressed in terms of age and sex difference. In the one nonconforming instance cephalic calipers were used to determine the cephalic index, thereafter to be correlated with an exposure chart. We decided to take the mean exposure for the last twenty-five 12-year-old girls.

Table II provides information on the manufacturers of the units, milliamperage and kilovoltage required for each exposure, exposure time, and the distance in inches from the film to the target.

Table I has shown that a large variable exists in the photographic phase of roentgenography; we now appear to have a second set of variables introduced in Table II. It is evident from a study of these two tables that literally hundreds of combinations of film, intensifying screens, and developing and exposure techniques, all capable of high-quality production are available to the operator.

It was now necessary to determine accurately the quantity of radiation produced by each unit according to the individual technique of the operator. For this we employed a Victoreen r meter, a highly accurate and delicate instrument which was described earlier in this article. I am indebted to Mr. Eugene Tochilin, a certified radiation physicist, for his aid in this phase of the procedure. His help in the computation of the radiation involved was incalculable.

Our approach was simple. We attached our r meter to the headholder of the cephalometer, using a ring stand and test tube clamp. We then adjusted the

TABLE II. X-RAY UNITS AND EXPOSURE CONDITIONS

INSTALLATION NO.	X-RAY UNIT	KVP	MILLI-AMPERES	AVERAGE EXPOSURE TIME (SECONDS)	FILM-TARGET DISTANCE* (INCHES)
1	General Electric 80 KVP	58	20	2	60
2	Meyer Clinic model 85 KVP	75	20	2	72
3	X-ray Mfg. Corp. of America Model OR-30	88	30	0.5	60
4	Continental X-ray Corp. Model DP-P	85	20	1	60
5	Continental X-ray Corp. Model DP-P	68	27	1	60
6	Continental X-ray Corp. Model DP-P	80	20	2	66
7	Continental X-ray Corp. Model DP-P	67	25	1	60

*Distance is measured from target to midline of patient.

condenser section of the meter to lie in the area represented by the midsagittal plane of the head. In addition, test films were secured to the chair to record the degree of gonadal radiation. Additional test films were fixed at salient points in the field of operation to determine exposure to operating personnel. Radiation detection badges were attached to the clothing of those involved in the testing procedure. It is interesting to note that test films are even more sensitive to minute quantities of radiation than is the r meter. The Radiation Detection Company of Palo Alto, California, developed and calibrated the test films, and they certify as to their accuracy. The Victoreen r meter was calibrated by Mr. Tochilin, and he attests to its accuracy.

TABLE III. SUMMARY OF X-RAY EXPOSURES

INSTALLATION NO.	HALF-VALUE LAYER (MM. ALUMINUM)	ROENTGENS PER EXPOSURE		
		TO HEAD OF PATIENT	TO GONADS OF PATIENT	TO X-RAY OPERATOR
1*	1.0	0.146	Less than 0.001	Less than 0.001
2	1.7	0.081	0.003	Less than 0.001
3	2.1	0.046	0.001	Less than 0.001†
4	1.1	0.074	Less than 0.001	Less than 0.001
5	1.4	0.078	0.055‡	Less than 0.001
6	1.4	0.115	0.030‡	Less than 0.001†
7	1.1	0.065	0.045‡	Less than 0.001

*For installation 1, data are for 58 KVP. Exposure dose to patient at 80 KVP is 0.220 roentgens.

†No shielding provided for operator.

‡High readings are due to lack of lead aperture to limit primary beam.

After all the data were assembled it became evident that our choice of installations was fortunate. The amount of radiation received by the patients varied as much as 300 per cent, while the resulting films exhibited a sustained high standard of quality.

Table III presents a study of the x-ray exposures made during the survey. The second column denotes the quantity of x-ray bombardment to the head of the patient (per exposure). The range is from 0.146 r to a low of but 0.046 r

per exposure. In other words, Unit 1 requires three times as much roentgenographic exposure to sensitize its film adequately as does Unit 3. The other five units vary between these extremes. Units 1 and 3, then, represent in our survey the upper and lower limits of radiation per exposure; conversely, Units 1 and 3 are the least and the most desirable from the patient's point of view. It was decided that a detailed analysis of the technical differences would be of interest. A quick reference to Table II indicates that Unit 1 has been designed by its manufacturer to deliver 80,000 volts at the peak of its output; in addition, it will produce 20 Ma. at the above limit. The technician operating the machine had chosen to use a kilovolt peak of but 58,000 volts and 20 Ma. The manufacturer of Unit 3 has designed its tube and power supply to operate continuously at a 90,000 KVP and 30 Ma. The exposure chosen by its technician was 88,000 volts and 30 Ma.

It should be remembered that the kilovoltage determines the hardness or penetrating power of the x-ray machine. The milliamperage determines the quantity of electrons conveyed to the target and therefore controls the amount of radiation delivered. The fact that Unit 3 was driven at a higher kilovoltage peak permitted a much shorter exposure time, one-quarter that of Unit 1, Unit 1 being exposed for two seconds while Unit 3 was exposed for 0.5 seconds.

In addition, Unit 3 was more heavily filtered with aluminum than the other units, as is shown in the second column of Table III, where it is noted that the half-value layer is 2.1 mm. on Unit 3 while it is but 1 mm. on Unit 1.

Trout and associates⁶ have concluded that the exposure to patients can be significantly reduced with no decrease in radiographic quality by the use of heavier filtration and greater kilovoltage. Our testing substantiates this contention. Since installation No. 1 delivered a total skin exposure to the head of 0.146 per two-second exposure, or 0.073 r per second, installation No. 3 delivered a total skin exposure of but 0.046 r per half-second exposure, or about 0.092 r per second.

A summation of the aforementioned material appears below:

<i>Unit 1:</i>	58 KVP/ 20 Ma. dosage at 60 seconds	= 0.073 r per second
	Maximum exposure per film	= 2 seconds
	Film	= DuPont 508
	Intensifying screen	= Patterson Par Speed
	Developing time	= 5 minutes at 68 degrees
	Adds up to 0.146 r per exposure	
	The total radiation delivered for a three-film series is	0.438 r.
<i>Unit 3:</i>	88 KVP/30 Ma. dosage at 60 seconds	= 0.092 r per second
	Maximum exposure per film	= 0.5 second
	Film	= DuPont 508
	Intensifying screen	= Patterson Par Speed
	Developing time	= 5 minutes at 68 degrees
	Adds up to 0.046 r per exposure	
	The total radiation delivered for a three-film series is	0.138 r.

The California State Department of Public Health, Division of Dental Health, in an effort to determine the amount of radiation received by the dental patient, has revealed that the skin dosage to a patient varies from 0.43 r to 18.1 r per intraoral x-ray exposure. This low figure of 0.43 r compares favorably with a three-film cephalometric series on the most inefficient machine tested, which created a skin dosage of but 0.438 r.

With proper filtration and exposure and a long-cone technique, intraoral exposures may be reduced as much as 0.18 r per film, which compares favorably with our skin exposure of 0.138 r for a three-film series on our most efficient unit.

Some minor changes in radiographic technique can result in further reduction of roentgenographic exposure. If Unit 3 were to substitute the use of Eastman Royal Blue film in place of DuPont 508, a $33\frac{1}{3}$ per cent reduction in exposure time would be conceivable. This would result in a three-film series creating 0.091 r. If we were further obliged to reduce our exposure time by replacing our Par Speed intensifying screen with a high-speed screen, an additional 20 per cent reduction in exposure time for a three-film series would be possible, which would result in an exposure of but 0.072 r per series.

This falls within tolerable limits by all standards now available which designate the total maximum to which any part of a person's body shall be permitted to be exposed continuously, or intermittently, in a given time. This shall be no more than 0.1 r per week.

Lest we become complacent, reference to the fourth column of Table III sheds light on the amount of exposure given by the seven sample installations to a patient's gonads. Units 1 through 4 exposed the gonadal region 0.003 r or less in each instance. Units 5 through 7 exposed the gonadal region 0.055 r, 0.030 r, and 0.045 r, respectively. The one creating the greatest amount of radiation, which by simple calculation would indicate production of 0.330 r for a complete before- and after-treatment series, would use up almost 25 per cent of the so-called doubling dose available to the patient before the age of 30.

A critical survey of these offending installations indicated that each of them lacked a lead aperture on the x-ray head designed to confine the primary x-ray beam to the cassette region. A few cents' worth of lead and a few minutes' experimentation and installation time can correct this deficiency. You may be sure that the units in question were immediately modified.

It would seem that a properly shielded, developed, and filtered cephalograph carries little radiographic threat by today's standards. An improperly filtered and poorly installed and calibrated installation, however, can cause irreparable damage.

CONCLUSIONS

The following suggestions, if carried out, will help to create an efficient procedure, capable of a high-quality result with a minimum of danger to patients and operating personnel.

1. Indulge in cephalometry if you believe it to be of true benefit in diagnosis and treatment plans.

2. Limit the exposure series to what you actually must have. One centric view should be adequate for most procedures.
3. Purchase proper equipment with a capacity equal to the load and with a timer designed for fractional second exposure.
4. Use proper aluminum filtration.
5. Use the highest-speed film available and the intensifying screen with the greatest reflective power.
6. Confine direct radiation to the cassette and head area by the use of lead apertures.
7. Purchase a lead apron (approximate cost, \$30.00) to protect the gonadal region from stray radiation.
8. Place 3 mm. of lead in the base frame of the dental chair cushion to complete encirclement of the gonadal region with lead.
9. Have the machine tested and calibrated by a radiation physicist and follow his suggestions.

The problem of secondary radiation is often overlooked in protecting operating personnel. Experiments with the r meter and test films suggest that some primary radiation and a great deal of secondary radiation are emitted from the back and particularly the ends of the x-ray tube. Secondary radiation is all-pervading, ricocheting easily from walls and ceiling. Hiding behind a lead screen offers no protection against secondary radiation; it protects the operator from the primary beam only. The only adequate safeguard for the operator is to encase the x-ray room in walls of lead and have the controls outside.

Development of the film badges of the testing personnel indicate that 0.015 r had been received as a result of the 150 exposures made during the course of the investigation.

In the midst of all the radiation material digested in preparation for this study, I found an article which, although scientific in nature, lent a bit of humor to an otherwise serious project. A group of men,⁷ writing for a publication called *Nature*, declare that it is possible to estimate the radiation dosage equivalent to the habit of wearing trousers through the genetically effective span of years. This is based, the article states, upon a study of temperature rise due to the unnatural habit of wearing clothes. The observed rate was 3.3° C. Assuming that man responds to the rise in temperature at the same rate as does the fruit fly, the conclusion is reached by the authors that 85 per cent of spontaneous mutation can be attributed to the equivalent gonadal dosage of 40 r for the first thirty years of life.

As we happily look about us at today's large families of conspicuously active children, we are not too worried about the trousers; we feel that even the roentgen may be trained to keep its subordinate position, and we are moved to quote again from Bacon: "Nature is often hidden, sometimes overcome, seldom extinguished."

SUMMARY

Many years elapsed before the lethal aspects of radiation were recognized; yet there persists a dichotomy of opinion on the tolerable limits of exposure.

Radiation may destroy tissue and disrupt genetic material. Man is subject to a natural radiation hazard for the first thirty years of about 5 r at sea level, which results in genetic mutation in 2 per cent of the birth rate. If, through medical necessity, we double the dosage to 10 r for these thirty years, we double the number of genetic defectives being produced.

Cephalometry involves a quantity of radiation sufficient to create genetic and tissue damage if not properly controlled. Seven installations were assessed as to the quantity of radiation being liberated to the head and to the gonads. They exhibited a wide divergence in the quantity of radiation used with a continued high standard of photographic result. It was established that a single head exposure may require less radiation than a single dental film due to the use of high-speed film, sensitive intensifying screens, and high kilovoltages with extremely short exposure times.

Gonadal exposure may be almost eliminated by the use of proper lead screens to confine the primary beam. The use of a lead apron, with the addition of a lead screen under the cushion of the dental chair to complete the encirclement of the gonads, will benefit the control of secondary radiation as well.

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SPECIALTY PRACTICE IN DENTISTRY

A CONFERENCE of National Organizations for Areas of Dental Practice was held in Chicago on June 2 and 3, 1960, by the Board of Trustees of the American Dental Association. In announcing the Conference, the Board requested a statement outlining the objectives and area of practice covered by each of the forty-two dental organizations invited to attend as participants or observers.

At the request of A. A. O. President William R. Humphrey and Past-president George M. Anderson, a "Survey of the Specialty Practice of Orthodontics" was prepared by B. F. Dewel in consultation by correspondence with other officers and directors of the American Association of Orthodontists and the American Board of Orthodontics. The educational recommendations from the Kellogg Foundation were provided by Dr. T. M. Graber.

The Survey presented to the American Dental Association follows.

TO: THE BOARD OF TRUSTEES OF THE AMERICAN DENTAL ASSOCIATION
FROM: THE AMERICAN ASSOCIATION OF ORTHODONTISTS

Whereas, the Board of Trustees of the American Dental Association has requested that each specialty area provide a "definition, even a preliminary and unofficial one, of the area of dental practice to which it is related," for the 1960 Conference of National Organizations for Areas of Dental Practice; and

Whereas, the Council on Dental Education has concluded that "the division of the practice of dentistry into special areas depends more upon a logical separation of services into those which have distinct biological, psychological and physiological approaches to diagnosis or treatment, involving knowledge and skills beyond those which are normally used in general practice, than on a fragmentation of services based upon techniques or procedures"; and

Whereas, there is no question but that the specialty of orthodontics fulfills these requirements, as listed in the accompanying appendix, and all others specified by the Council at its June 9-10, 1959, conference:

Therefore, the American Association of Orthodontists recommends that the American Dental Association continue to (1) recognize orthodontics as a dental specialty and (2) assist it in maintaining the particular areas of specialty practice traditionally held to be within the province of orthodontics throughout the history of orthodontics and the sixty years of existence of the American Association of Orthodontists.

APPENDIX SURVEY OF THE SPECIALTY PRACTICE OF ORTHODONTICS ORGANIZATION

The American Association of Orthodontists was organized in 1900. It is composed of approximately 2,100 orthodontists in the exclusive practice of the specialty of orthodontics. There are eight constituent societies representing

every section of the country. The governing body of the Association is known as the Board of Directors; it is composed of the principal officers of the Association, eight directors elected by the constituent societies, and the chairmen of all elected committees of the national organization. The two principal membership classifications are active and associate. An associate member applying for active membership must have been in the exclusive practice of orthodontics for the equivalent of five years. Both active and associate members must be members of the American Dental Association before they can become members of the American Association of Orthodontists.

OBJECTIVES OF THE SPECIALTY

The following objectives of the specialty are given in the Constitution of the American Association of Orthodontists:

1. To advance the science and art of orthodontics.
2. To encourage and sponsor research.
3. To strive for higher standards of excellence in orthodontic instruction and practice.
4. To contribute its part in health service.

THE AMERICAN BOARD OF ORTHODONTICS

The American Board of Orthodontics was created by the American Association of Orthodontists in 1929. It was the first certifying board to be established in dentistry and at the time of its organization was preceded by only two in medicine. It derives its authority from the American Association of Orthodontists and the Council on Dental Education of the American Dental Association. It is composed of seven directors elected by the American Association of Orthodontists. Examinations are given once each year during the week immediately preceding the annual session of the American Association of Orthodontists. Candidates for examination must have been in the exclusive practice of orthodontics for five years and active members of the American Association of Orthodontists for at least two years before they may apply for examination.

The purposes of the American Board of Orthodontics are as follows:

1. To stimulate and keep alive the spirit of research and self-improvement among students and practitioners of orthodontics.
2. To establish the competence of specialists to practice orthodontics.
3. To arrange, control, and conduct examinations for the purpose of testing the qualifications of orthodontists and to confer certificates upon those who meet the established requirements of the Board.

ON SPECIALISTS AND DIPLOMATES

No one can become a diplomate of the American Board of Orthodontics unless he is first a specialist in orthodontics; hence, the American Association of Orthodontists and the American Board of Orthodontics consider that a diplomate is a specialist who has been accredited by a Board in a specific area of specialty practice. Any other interpretation would be confusing to a general public which makes no distinction between the two terms and which has been conditioned to believe that a diplomate in medical or dental practice must be a specialist in order to have been certified in that particular specialty.

PRECEPTOR TRAINING

The American Association of Orthodontists appreciates the support it received from the Council on Dental Education of the American Dental Association in setting a date for the termination of preceptor programs for specialty

training. By a similar resolution passed at the annual meeting of the American Association of Orthodontists, no one can become a member of the Association or apply for certification by the American Board of Orthodontics on any preceptor training program undertaken after Jan. 1, 1967. The specialty of orthodontics thus realizes a goal it has long sought for the exclusive training of specialists under university discipline.

The American Association of Orthodontists believes that the resulting time interval should be sufficient for the American Association of Dental Schools and the deans of the various dental schools to establish the required Council on Dental Education accredited graduate departments in orthodontics before the preceptor programs are terminated. Meanwhile, in the public interest, the specialty is attempting to fill the need for additional orthodontists by a rigidly controlled system of preceptor training under the direct supervision of the American Association of Orthodontists and supervising boards of the component societies. The preceptor as well as the preceptee follows prescribed courses of study, and each is subject to approval by examination preceding and during the program.

THE AREA OF ORTHODONTIC SPECIALTY PRACTICE

The specialty of orthodontics encourages mutual cooperation with the American Dental Association and a free exchange of ideas and concepts between the various specialty groups. While it realizes that every ethical dentist is licensed to practice in all areas of dental practice, the American Association of Orthodontists shares a general concern with other specialties over the identification of specific areas of specialized practice. By the very nature of the term, *specialization* implies a limitation of treatment procedures to one restricted field of professional practice. If this were not true, then each specialty would, in fact, be engaged in general practice rather than in a circumscribed specialty area.

Orthodontics considers that its principal responsibility is the supervision of growth and development of the dentition and associated facial structures from birth through to dental maturity. Prevention of malocclusion is the highest objective of orthodontics. The specialty welcomes assistance in space maintenance, tooth preservation, and habit correction from the general dentist and other specialties, but all corrective procedures involving tooth movement and requiring either functional or mechanical treatment are the responsibility of the orthodontist. These have been the traditional areas of orthodontic practice throughout the history of the specialty.

To a certain degree, a moderate overlapping of services exists between all specialties. A need exists, however, to define the major areas of dental practice that fall within the jurisdiction of each individual specialty. The American Association of Orthodontists urges that this be done so that no specialty will find it possible to extend its area of specialization to include services that more properly belong to another specialty.

ORTHODONTIC REQUIREMENTS IN EDUCATION

Orthodontics has had a continuing interest in specialized education under university discipline from the inception of the American Association of Orthodontists in 1900. Since the opportunity for the original diagnosis of malocclusion lies in great part with the general dentist, orthodontic departments should assume all responsibility for teaching the principles of orthodontics in every dental school.

The most recent statement of fundamental principles of undergraduate orthodontic education were developed at the Workshop in Orthodontics, held at the Kellogg Foundation Institute, University of Michigan, Ann Arbor, June 16 through June 21, 1958. The Workshop was sponsored by the University of Michigan, the W. K. Kellogg Foundation Institute of Graduate and Post Graduate Dentistry, and the Education Committee of the American Association of Orthodontists. Participants were outstanding educators and clinicians in orthodontics and associated fields.

OBJECTIVES OF UNDERGRADUATE ORTHODONTIC EDUCATION

To apply to the field of orthodontics the knowledge derived from the basic sciences, together with that from the field of orthodontics itself, to the end that the dental graduate would have the background necessary to recognize those conditions he is capable of managing. Specifically, he should be able to:

- A. Anticipate and detect malocclusion.
- B. Take steps to prevent malocclusion where possible.
- C. Use this knowledge as an adjunct to procedures in all other phases of dental practice.
- D. Provide a basis for understanding the possibilities of orthodontic treatment.

To implement the objectives of undergraduate orthodontic education, the following subjects are considered essential:

1. A definition of terms: a concept, a diagnosis, and a discipline. Preventive, interceptive and corrective orthodontics. What the dental student should know about each.
2. Growth and development—from a preventive point of view.
 - A. Prenatal development—embryology of oral and craniofacial areas.
 - B. Postnatal development of oral and craniofacial areas. (Eruption and resorption time tables, patterns of growth, pubertal role, etc.)
 - C. The achievement of a normal occlusion—the concept of a range of normalcy under the influence of homeostasis.
3. Physiology of the stomatognathic system.
 - A. Osteology—Wolff's law, stress trajectories, role of function on form, mesial drift, temporomandibular articulation, etc.
 - B. Myology—the dynamic nature of the system and its influence on dentofacial morphology.
4. Incidence and recognition of malocclusion.
 - A. Prevalence in populations: Racial and ethnic variations; differences due to facial types.
 - B. Variations in number, form, size, and position of teeth; terminology and categorization of malocclusion characteristics.
 - C. Classification of general types of malocclusion; Angle's classification; jaw, teeth, profile relationships.
5. Etiology of malocclusion.
 - A. Role of heredity; predominance of morphogenetic pattern, congenital defects.
 - B. Extrinsic factors.
 - C. Intrinsic factors.

6. Diagnostic records and their interpretation—importance of case analysis in determining preventive, interceptive, and corrective approaches.
 - A. Information gleaned from each criterion (plaster casts, dental radiographs, photographs, cephalometric headplates, temporomandibular joint radiographs, etc.).
 - B. Method of taking and preparing study models.
7. Unfavorable sequelae of malocclusion.
 - A. Possible interference with normal growth and development.
 - B. Abnormal muscle function.
 - C. Associated abnormal habits; bruxism, tongue-thrusting, lip-biting, etc.
 - D. Improper deglutition, abnormal mastication, speech defects, mouth breathing, etc.
 - E. Predilection toward dental caries and periodontal disease.
 - F. Temporomandibular joint disorders.
 - G. Complications in prosthetic rehabilitation.
 - H. Unfavorable psychologic, social, and esthetic aspects.
 - I. Predilection to accidents—fractured, devitalized, or lost incisors, etc.
8. Biomechanical principles of tooth movement; tissue response to orthodontics.
9. General principles of orthodontic therapy; description of appliances now in use to familiarize students with treatment methods.
 - A. How to handle patient who is under care of orthodontist; caries check, prophylaxis, soft tissue control, emergency appointments, etc.
10. Preventive orthodontics. The maintenance of a normal occlusion.
 - A. Proper operative care—correct restoration of tooth dimensions.
 - B. Constant vigilance to keep exchange of teeth on time.
 - C. Recognition and elimination of abnormal habits before harm is done.
 - D. Functional space maintenance.
 - E. Patient-parent education to long-term nature of dental service.
11. Interceptive orthodontics.
 - A. Habit appliances—where malocclusion exists.
 - B. Occlusal equilibration.
 - C. Serial extraction—stressing that this procedure must be under control of the orthodontist at all times (description here merely to familiarize student with this orthodontic procedure).
12. Limited corrective orthodontics.
 - A. Anterior cross-bite—tongue blades, ligating, guide planes, etc. (advantages and disadvantages).
 - B. Posterior cross-bite of single teeth (limitations, dangers, advantages).
 - C. Excessive overbite and functional problems; the role of the bite plate; use of bite plate for temporomandibular joint disturbances, as a dental “crutch,” etc.
 - D. Space control with simple removable and fixed appliances, to be used in conjunction with restorative and periodontal therapy; diastemas, uprighting teeth for fixed prostheses, etc.
 - E. Strictly circumscribed nature of corrective procedures to be used by general practitioner; advantages and disadvantages.

GRADUATE EDUCATION

The specialty of orthodontics demands graduate training far beyond that possible in the undergraduate dental program. The Workshop in Orthodontics, held at the W. K. Kellogg Foundation Institute, recommended a graduate training program of a minimum of eighteen months and developed a suggested course to serve as a guide only for institutions desirous of training dentists for the specialty of orthodontics.

<i>Required Subjects</i>	<i>Suggested Clock Hours</i>
Head and neck anatomy (lecture and dissection)	75
Applied histopathology of teeth and supporting structures (lecture and laboratory)	50
Growth and development lectures (plus assigned reading)	25
Oral physiology lectures (plus assigned reading)	25
Cephalometric and oral radiology (laboratory and lecture plus assigned reading)	50
Orthodontic materials lectures	15
Embryology and human genetics	30
Bimechanical principles (lecture and laboratory)	50
Case treatment and case analysis (lecture and laboratory)	300
Research methodology	15
Research	300
General Seminar	100
(In the General Seminar sessions orthodontic and related literature may be subjects for the seminar sessions. Guest lecturers may be brought in to cover material on clinical photography, endocrinology, pediatrics, pedodontics, periodontics, interprofessional relations, and other areas of interest to those studying orthodontics.)	
Total	1,035

ELECTIVE SUBJECTS

These include speech physiology, child psychology, practice administration, bacteriology of dental caries, anthropology and comparative anatomy, congenital facial deformities, public speaking, manuscript preparation, and dental education. These total 150 clock hours.

Thus, in the suggested graduate curriculum there would be 1,035 clock hours set aside for required subjects, 150 clock hours designated for the study of elective subjects, 1,800 clock hours for clinical and laboratory sessions, and 2,985 total clock hours for the graduate curriculum as recommended by the Orthodontic Workshop.

ORTHODONTIC LITERATURE

Supplementing this educational goal is an enviable record of contributions to the orthodontic literature. A score or more of orthodontic textbooks are available to the student, the general dentist, and the specialist. Most of them are in their third or fourth editions, and a few are in their eighth or ninth editions.

The specialty of orthodontics also is well served by two periodicals. The AMERICAN JOURNAL OF ORTHODONTICS is published under the authority of the American Association of Orthodontics. Direct control is exercised by an A. A. O. Publication Board, an editor in chief, an assistant editor, and an abstract editor, all of whom are elected by the Board of Directors of the American Association

of Orthodontists. Eight sectional editors are elected by the constituent societies of the Association. The AMERICAN JOURNAL OF ORTHODONTICS has been under continuous monthly publication for forty-six years and has a subscription list of more than 5,600 subscribers. The official JOURNAL of the American Association of Orthodontists is thus seen to be available to all interested dentists.

The *Angle Orthodontist* is published by the Edward H. Angle Society of Orthodontia. It is issued quarterly to approximately 3,000 subscribers and has been in continuous publication for twenty-nine years. There are also several foreign publications devoted exclusively to the specialty of orthodontics.

THE FUTURE IN ORTHODONTICS

Orthodontics anticipates even greater accomplishments in the years to come. Its leadership is strong and dedicated, and its membership is aware of its responsibilities as a health service. It expects to continue its activities in Workshop Conferences such as those already conducted in Education and in Cephalometric Diagnosis. Evidence of this continuing recognition of its responsibilities is shown by four conferences held in conjunction with the recent international meeting of the American Association of Orthodontists in Washington: Separate conferences on Orthodontic Education and Public Health Orthodontics prior to the meeting, the preliminary organization of an International Association for Orthodontic Research during the meeting, and a two-day Orthodontic Conference on Growth at the National Institute of Health following the meeting. Each year one afternoon of the program is given over to university research, and there has been a constantly increasing number of short intensive post-graduate courses under university control. Thus, orthodontics realizes that it shares with the dental schools the responsibility of comprehensive orthodontic education, and it looks forward to the day when this can be accomplished on a sound and logical basis.

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Editorial

BERNHARD W. WEINBERGER, DENTAL HISTORIAN

IN MAY, 1911, at the suggestion of Dr. Edward H. Angle, a young man was asked to contribute the address of the evening at the second annual meeting of the Eastern Association of Graduates of the Angle School of Orthodontia. His presentation was entitled "A Sketch of the History of Orthodontics," and the subject so stimulated the author that he went on to become an authority on the history of orthodontics and dentistry. That man was Bernhard Wolf Weinberger, who died in New Orleans on May 9, 1960, at the age of 74.

A native of Idaho Springs, Colorado, Dr. Weinberger received his D.D.S. degree from the University of Pennsylvania School of Dentistry in 1908. He was a member of the Class of 1909 of the Angle School of Orthodontia, and upon graduating he became associated with Dr. Frank Gough of Brooklyn, New York. In 1913 he opened his own office in New York City, where he continued to practice until his retirement. From 1923 to 1931 he was a lecturer and professor of dental history and literature at New York University College of Dentistry. He held numerous offices in national and international dental and orthodontic organizations and was founder in 1930 of the United States section of the International College of Dentists.

In 1909 orthodontics was cautiously casting about to determine just where and how it fitted into the health services, if at all. Dr. Angle claimed that orthodontics should be a part of medicine, an attitude that Dr. Weinberger and a number of Angle's early students rather unconvincingly assumed.

The paper that Dr. Weinberger read before the Eastern Association of Graduates of the Angle School of Orthodontia was originally published in the *American Orthodontist* in late 1911 and early 1912. The *American Orthodontist*, under the editorship of Martin Dewey, was the first journal ever devoted to orthodontics. It proved to be rather short lived, and in 1915 it was succeeded by the INTERNATIONAL JOURNAL OF ORTHODONTIA (now the AMERICAN JOURNAL OF ORTHODONTICS), also edited by Dr. Dewey. In the early years of the INTERNATIONAL JOURNAL OF ORTHODONTIA, Dr. Weinberger was its most prolific writer. His 1911 paper prompted Dr. Dewey and Dr. C. V. Mosby to call upon him with the suggestion that he write a history to be published serially in the new journal that they were contemplating. In agreeing to do this, he assured Dr. Dewey of material for the JOURNAL's early issues.

Publication of the history began with the August, 1915, issue and ran for thirty-six issues up to August, 1922, for a total of 596 pages. This material

was then divided into some five periods, each with an introduction and a summary. To this was added a bibliography of more than 3,000 references, and the work was published in book form in 1926.

It seems appropriate at this point to quote from one of Dr. Weinberger's later writings, which appeared in the centennial number of the *New York Journal of Dentistry* (May, 1959), because of the way it ties in with present-day trends. This article also reveals something of his views after he had written the bulk of the history of both dentistry and orthodontics and had enjoyed a "ringside seat" at the birth and development of modern orthodontics.

Criticizing some of dentistry's modern trends, Dr. Weinberger wrote: "It is quite evident that those who formulated our initial educational policies had in mind the creation of a professional man whose interest should be beyond the teeth and surrounding structures. Somewhere along the line this idea became lost." He went on to say: "For years there was the struggle between the University Dental Schools and those privately owned. Each guarded jealously their methods of instruction and concept of dental practice, thus turning out entirely different types of students.

"We are indebted to orthodontics for the part it played in bringing about the reunion of dentistry and medicine, and for the revival of the original ideas of the founders in 1934. One of the most important edicts handed down during the early part of the twentieth century was the importance of the full complement of teeth and normal occlusion. Within the last two decades a new philosophy of orthodontic treatment has arisen that again encourages the extraction of teeth and the disregard for the concept of the full complement of teeth and occlusion.

"This false philosophy is helping to again break down the basic concept of a dentist, and instead of being a specialized practitioner of medicine, he is rapidly becoming a 'tooth carpenter.' A lesson that this should teach us is that the greatest progress in dentistry occurs during the time when the dentist sees his patient as a whole. It is that type of practitioner who renders the greatest service to his patient and thus serves and elevates the standards of practice."

"...For the condition of the mouth is an indication of the patient's health."

"The concept expressed in 1949 should no longer be SUBJECT TO DEBATE in the next century of organized effort in the dental profession."

On the desk in front of this editor is a list of Dr. Weinberger's contributions to the orthodontic literature. They were secured from the librarian of the American Association of Orthodontists, Charles R. Baker of Evanston, Illinois. In sending in this material, Dr. Baker wrote: "I am amazed, astonished, and even flabbergasted to know how much this man has contributed to the orthodontic literature. It hardly seems possible that a single person could do so much in a lifetime. This volume of time and effort must have been given at great financial sacrifice." A statement by Joseph D. Eby some time ago confirms this assumption.

At the time the Sigma Epsilon Delta Fraternity Award for 1948 was announced, it was stated: "We have selected Dr. Weinberger because of his many outstanding services to the dental profession. We are proud of him as a practicing orthodontist and organizational worker, as a bibliophile and as an author of renown and distinction. His contributions to orthodontic and dental literature are too numerous to be mentioned. Suffice it to say his contributions have reflected great credit on him" (*The Sedeltan Bulletin*, March, 1949).

Because Dr. Weinberger's record is one of great importance in orthodontic achievement, and in order that it may be used as a reference for authors and students in years to come, that record is printed herewith immediately following this editorial. Few realize that Dr. Weinberger was the most prolific contributor to the written orthodontic record and that he assembled a long list of important honors.



BERNHARD W. WEINBERGER.

It must have been, partly at least, his writing accomplishments in dentistry and his early interest in biologic science that gained for him Fellowships in the New York Academy of Sciences (1922) and the American Association for the Advancement of Science (1925) and enabled him to be listed in *American Men of Science* (1927), *Who's Who in America* (1930), *Who Knows—and What* (1949), and *Jews in the World of Science* (1956), membership in O. K. U. dental and Phi Gamma Mu social science honor fraternities, selection as Man of the Year, Sigma Epsilon Delta Award (1948), and the Alumni Award of Merit, University of Pennsylvania (1955).

Dr. Weinberger practiced dentistry in New York City for almost a half-century. During part of that time he shared office space with another stalwart who helped create the specialty of orthodontics, the late Dr. Milo Hellman.

One of dentistry's most dedicated historians has left us, but his contributions will remain forever. Some of them are listed here.

H. C. P.

PUBLISHED ORTHODONTIC PAPERS BY DR. WEINBERGER*

1. A Sketch of the History of Orthodontia, read before the Eastern Association of Graduates of the Angle School of Orthodontia, May 27, 1911; published under the title "Orthodontia, Its Origin and Factors in Its Development," Am. Orthodontist, July and October, 1911; January, 1912.
2. A New Index of All Orthodontic Literature, Am. Orthodontist 3: 164-166, 1912.
3. The Symposium on Orthodontia, American Laryngological, Rhinological, and Otolological Society, Philadelphia, 1912, published by the Eastern Association under the title, "Bibliography of Literature Pertaining to Orthodontia." (This was reproduced with an editorial within the past year by Pollock.)
4. A Study of Normal Dental Arches and Normal Occlusion, Dental Cosmos 56: 665-680, 1914.
5. An Orthodontic Index, Dental Cosmos 57: 697, 1915.
6. Evolution of Orthodontia and Steps in Its Development, printed serially in INT. J. ORTHODONTIA, vols. 1 to 8, 1915-1922, 36 issues, 596 pp.
7. Important Prenatal Factors That Influence the Development of the Facial Area and Cause Malrelation of the Dental Arches at Birth, D. Items Interest 38: 813-834, 1916.
8. Orthodontia and the General Physical Health, New York M. J. 103: 769-775, 1916.
9. Orthodontia—Its Purpose, Problems and Possibilities, INT. J. ORTHODONTIA 3: 373-394, 1917; D. Outlook 5: 253-267, 1918.
10. The Results Observed in a Further Study of Prenatal Causes of Dento-Facial Deformities, D. Items Interest 40: 6-30, 1918; INT. J. ORTHODONTIA 4: 1-21, 1918.
11. What Orthodontia and Orthodontics Have to Offer to our Own as Well as Allied Sciences, INT. J. ORTHODONTIA 5: 1-20, 1919; D. Items Interest 41: 269-288, 1919.
12. Eighteen Years of the American Society of Orthodontists, St. Louis, 1921, American Society of Orthodontists.
13. Simplifying Model Trimming, INT. J. ORTHODONTIA 7: 301-305, 1921.
14. Orthodontic Bibliotheca, Dental Cosmos 63: 1126-1141, 1921.
15. Studies of the Position in Utero, and Mechanical Disturbances as Revealed by the Roentgenogram, and Their Probable Etiological Bearing on Dento-Facial Deformities and Malocclusion of the Teeth, Dental Cosmos 64: 643-660, 1922.
16. Dental Orthopedia and Correction of Cleft Palate; a Review of Calvin S. Case's Book, D. Items Interest 44: 716-717, 1922.
17. The Work of Retzius Considered From Our Present Knowledge in Respect to Malrelation of the Dental Arches, INT. J. ORTHODONTIA 8: 701-716, 1922.
18. Endocrine Glands, Dental Cosmos 65: 312-313, 1923.
19. Orthodontics: An Historical Review of Its Origin, Bull. Pacific Coast Society of Orthodontists 3: 49-54, 1924.
20. Harry E. Kelsey on Orthodontic Treatment, J. Am. Dent. A. 13: 766-769, 1926.
21. The Contributions of the Eastern Association of Graduates of the Angle School of Orthodontia, read before the Society, May, 1926; published as a booklet in 1927.
22. Report of Orthodontic Science and Literature, November, 1925.
23. Introduction of the Angle System at the Ninth International Medical Congress, Washington, D. C., 1889; published in the Memorial volume to the late Edward H. Angle by the Eastern Association of Graduates of the Angle School of Orthodontia, New York, 1931, pp. 5-10.
24. Orthodontics of Yesterday and Today, D. Survey 8: 30-34, 70-79, 1932.
25. An Historical Résumé of the Evolution and the Growth of Orthodontics, J. Am. Dent. A. 21: 2001-2021, 1934.
26. A Plea for a More Scientific Procedure in Presenting Our Orthodontic Problems, INT. J. ORTHODONTIA 20: 1093-1096, 1934.
27. The Evolution of the Orthodontic Appliance From the Series of Reconstructed Specimens, INT. J. ORTHODONTIA 20: 1182-1184, 1934.
28. Straightening Teeth, INT. J. ORTHODONTIA 21: 411-425, 1935.
29. The Historical Background of Modern Orthodontia. Chap. 1 in Dewey, M.: *Practical Orthodontia*, ed. 5, St. Louis, 1935, The C. V. Mosby Company (and subsequent editions).

*In addition to the papers listed here, there were some 200 published papers on dental bibliography, biography, history, and libraries. In addition he presented many papers that were not published.

30. The Contribution of Orthodontics to Dentistry, *Dental Cosmos* 78: 843-853, 1936.
31. Medical Problems in Orthodontia, *AM. J. ORTHODONTICS & ORAL SURG.* 24: 213-234, 1938.
32. What is Orthodontics? Read before Columbia University Post Graduate Orthodontic Group, March, 1937.
33. The Eastern Association of Graduates of the Angle School of Orthodontia: Its Contribution to the Advancement of Orthodontics, *AM. J. ORTHODONTICS & ORAL SURG.* 25: 984-997, 1939. (Also included in a booklet of the same title, pp. 72-85.)
34. Exhibit Relating to the Above Society (in above contribution³³).
35. An Index of All Contributions Presented Before the Society (in above booklet,³³ 111-139).
36. John Hunter and His Natural History of the Human Teeth, *AM. J. ORTHODONTICS & ORAL SURG.* 26: 246-258, 1940.
37. More on the Extraction in Orthodontics, *New York J. Dent.* 17: 192-193, 1947.
38. A Tribute to Milo Hellman, *Angle Orthodontist* 16: 1948.
39. The Angle School of Orthodontia, *AM. J. ORTHODONTICS* 35: 298-308, 1949.
40. Dr. Edward Hartley Angle—His Influence on Orthodontia, *AM. J. ORTHODONTICS* 36: 596-607, 1950.
41. What Does One Mean by Orthodontics? *AM. J. ORTHODONTICS* 37: 125-138, 1951.
42. Orthodontic Trends, *AM. J. ORTHODONTICS* 40: 549-551, 1954.
43. Correspondence, *AM. J. ORTHODONTICS* 42: 228, 1956.
44. From "Irregularities of the Teeth" to Orthodontics as a Speciality, *AM. J. ORTHODONTICS* 42: 209-225, 1956.
45. Milo Hellman: A Man of Science, *AM. J. ORTHODONTICS* 42: 858-866, 1956.
46. Rodrigues Ottolengui, *AM. J. ORTHODONTICS* 44: 603-610, 1958.

BOOKS AND MONOGRAPHS

1. Dental Bibliography, ed. 1, New York, 1916, New York Academy of Medicine, 40 pp.
2. Eighteen Years of the American Society of Orthodontia, 1921, 40 pp.
3. Orthodontics, an Historical Review of Its Origin and Evolution, St. Louis, 1926, The C. V. Mosby Company, 2 vols. 1011 pp.
4. The Contributions of the Eastern Association of Graduates of the Angle School of Orthodontia, to Orthodontics; a Review and Index of Its Proceedings, 1909-1927, 48 pp.
5. A Memorial Meeting to the late Edward Hartley Angle (edited by B. W. W.), published by the Eastern Association of Graduates of the Angle School of Orthodontia, January, 1931.
6. Dental Literature: Its Origin and Development, published in *J. D. Res.* 6: 305-388, 1924-1926 and as a separate monograph.
7. Dental Bibliography: A Reference Index to the Literature of Dental Science and Art as Found in the Libraries of the New York Academy of Medicine and Bernhard Wolf Weinberger, ed. 2, published by First District Dental Society, 1929, 183 pp.
8. Notes on Appreciation of Dental Writing, *D. Survey*, twelve issues—April 1930, to April 1931, 64 pp.
9. Dental Bibliography. Part II. A Subject Index, 1932, pp. 187-262.
10. The Contribution of the Eastern Association to the Science and Practice of Orthodontia, 1939 (edited by B. W. W.).
11. Pierre Fauchard—Surgeon Dentist; a Brief Account of the Beginning of Modern Dentistry, published by Pierre Fauchard Academy, 1941, 102 pp.
12. Introduction to the History of Dentistry, St. Louis, 1948, The C. V. Mosby Company, 2 vols.

The Fifty-sixth Annual Meeting of the American Association of Orthodontists

THE AMERICAN ASSOCIATION OF ORTHODONTISTS
AT WASHINGTON, D. C.

AT THE TIME of the A. A. O. meeting in Washington, D. C., April 24 to 28, 1960, Washington headlines had little room for any news other than the visit of President de Gaulle of France. One subject that was not being neglected, however, was the matter of medical aid for elderly persons under Social Security, which at that time was rapidly assuming nationwide political importance. Regardless of what we may think of it, there seems little doubt that some form of health insurance program will be enacted before Congress adjourns, with or without Administration approval.

It is interesting that at the time the subject of health service for the elderly was being debated, a few blocks away about 1,500 persons were attending a meeting concerned with a health service for the young. It is interesting also to recall that around the time of World War I this same body, the American Association of Orthodontists, registered less than 100 workers at its annual meetings.

The Washington meeting proved a number of things. For example, it proved that the one-hotel type of meeting has been outgrown and that our meetings now are too big to be conducted according to the old rules. The Board of Directors now has such a big and important job that they expect hereafter to assemble at least one day in advance of the meeting in order to transact all the official business that comes before them.

The television idea was new and big. The TV clinics of William L. Wilson and Joseph R. Jarabak were sharp and clear. They were regarded by the management of the meeting as more or less of an experiment to ascertain whether something could be done to bring good, sharp television clinics before a large group of interested spectators. The only thing wrong, obviously, is that the operation is expensive, and it was only through help from the outside that this experiment was possible. In some of the other attempts, however, the TV images were not reflected sufficiently sharp for good audience reception, notwithstanding the fact that the technicians worked long and hard.

T. M. Graber, the efficient general program chairman, wrote subsequent to the meeting:

I feel the meeting was a real success, and the credit for this goes to the tremendous drive, inspiration, and unflagging devotion to the job at hand by one man—*George Anderson!*

The team worked well for him, of course, but it was he who kept the team on its toes doing their assigned jobs. I know how much work this meant, and I feel that some effort must be made in the future to reduce the responsibility of the president of our organization for the annual meeting. Having a general chairman helps a great deal, I am sure; having a permanent secretarial staff may help even more. The president has quite enough to do with the many important problems that face our profession and our Society these days, without having to worry about the meeting.

The great demand for hotel rooms far exceeded the supply, and, unfortunately, many were forced to seek accommodations wherever rooms could be obtained. The reservation situation no doubt will alert the A. A. O. to the fact that in the future large blocks of rooms should be set aside for everyone taking part in the program and for all officers who signify that they plan to attend, regardless of whether or not they are elected or appointed to committees. Vice-chairman B. E. Erikson made this suggestion as a result of his wide experience with the problem.

Both auditoriums were filled to capacity, with approximately 1,500 people, on Thursday when Dr. Begg of Australia was the essayist. The TV hookup permitted the program to be seen and heard in both auditoriums and on two different floors at the same time.

On Tuesday a movie released before the Research Section by Gustav Korkhaus of Bonn, Germany, attracted more than 150 viewers, a record attendance for the Research Section. Other visitors and clinicians from abroad were P. Raymond Begg, Adelaide, South Australia; C. F. Ballard, London, England; C. Philip Adams, Belfast, North Ireland; William Grossman, London, England; Egil P. Harvold, Toronto, Canada (Oslo, Norway); Karl Häupl, Dusseldorf, Germany; Newton de Castro, Rio de Janeiro, Brazil; Sheldon Friel, Dublin, Ireland; Birger Kjellgren, Stockholm, Sweden; Hugo Lager, Copenhagen, Denmark; Roger X. O'Meyer, Paris, France; Giorgio Maj, Bologna, Italy; Anders Lundström, Stockholm, Sweden; Kaare Reitan, Oslo, Norway; and A. Martin Schwarz, Vienna, Austria.

In describing the program, Paul V. Reid, chairman of the Program Committee, stated:

There is no definite theme for the essay portion of this year's program. Instead, speakers were chosen with one aim in mind—to secure the best representation of orthodontic thought from different areas of the world. From the scheduled opening paper, the premier John Valentine Mershon Memorial Lecture, through the last paper by our distinguished visitor from halfway around the globe, you will observe that this objective has been achieved. One paper deals with certain phases of etiology, another covers an equally basic subject, tissue response and the clinical implications thereof. The other five concern treatment, with two of this country's finest clinicians presenting their concepts, and speakers from Europe, South America, and Australia giving further coverage and providing a broad range of viewpoints. Rounding out the essay section, in addition to the special Memorial Lecture, is an outstanding American Board thesis, condensed to more appropriate length for this meeting, but provocative of study in its entirety in the May, 1960, issue of the *AMERICAN JOURNAL OF ORTHODONTICS*. This opportunity for an interchange of ideas with our colleagues from abroad constitutes a "theme" in itself.

On Monday the first John V. Mershon Memorial Lecture on the subject of "Public and Professional Relations" was presented by C. Edward Martinek of Detroit, Michigan. This was followed by a paper entitled "Asymmetries of the

Teeth, Dental Arches, Jaws, and Skull and Their Etiological Significance" by Anders Lundström of Stockholm, Sweden. The Past Presidents' Luncheon was held at noon, with C. Edward Martinek as master of ceremonies. In the afternoon L. Bodine Higley, president of the American Board of Orthodontics, presented the Albert H. Ketcham Memorial Awards to Sheldon Friel of Dublin, Ireland, and Charles H. Tweed of Tucson, Arizona. This was followed by papers entitled "Relegating Appliance Therapy to Its Proper Place in Orthodontic Service" by Oren Oliver of Nashville, Tennessee, and "Tissue Behavior During Orthodontic Tooth Movement" by Kaare Reitan of Oslo, Norway.

On Tuesday C. Philip Adams of Belfast, Ireland, and Charles H. Tweed of Tucson, Arizona, presented papers entitled, respectively, "Orthodontic Doctrine and Mechanical Treatment Methods" and "The Importance of an Accurate Analysis in Orthodontic Diagnosis and Treatment Procedures."

The Research Section program was presented on Tuesday afternoon. This was presided over by Herbert I. Margolis, chairman of the A. A. O. Research Committee. The honorary presiding officer was Francis A. Arnold, Jr., chief of the National Institute of Dental Research, Department of Health, Education and Welfare, Bethesda, Maryland. The essay that won the Milo Hellman Research Award was read, and J. A. Salzmänn, chairman of the Second Cephalometric Workshop Committee, presented a report on the Second Cephalometric Workshop.

The general table clinics, a Wednesday morning feature, were presided over by Nathan G. Gaston of Monroe, Louisiana. At noon B. Edwin Erikson of Washington, D. C., vice-chairman of the 1960 session, presided over a round-table discussion luncheon. This was followed by the registered-attendance lecture-clinic sessions, under the direction of Frank P. Bowyer of Knoxville, Tennessee. On Wednesday evening the President's reception and banquet, honoring Dr. and Mrs. George M. Anderson of Baltimore, Maryland, was held.

On Thursday morning at the scientific session there were two honorary presiding officers—Robert Y. Norton, president of the Australian Society of Orthodontists, and Armando Werneck de Carvalho, vice-president of the Brazilian Society of Orthodontists. Kyrle W. Preis, president of the Middle Atlantic Society of Orthodontists, presided over this part of the session, at which Robert M. Ricketts of Pacific Palisades, California, presented his American Board thesis entitled "A Foundation for Cephalometric Communication." This was followed by the reading of papers entitled "The Challenge of Class II Malocclusion" by Newton de Castro of Rio de Janeiro, Brazil, and "Light Arch Wire Technique" by P. Raymond Begg of Adelaide, South Australia.

Members of the local committees who carried much of the load for this, the largest of all orthodontic meetings ever held anywhere, were as follows:

1960—SESSION

T. M. GRABER, *General Chairman*
450 Green Bay Rd.
Kenilworth, Illinois

B. EDWIN ERIKSON, *Vice-Chairman*
3726 Connecticut Ave., N.W.
Washington, D. C.

PROGRAM

PAUL V. REID, *Chairman*
Medical Arts Bldg.
Philadelphia, Pennsylvania
FRANK P. BOWYER
NATHAN G. GASTON
RUSSELL E. HUBER†
J. A. SALZMANN

HERBERT I. MARGOLIS (ex-officio Research)

LOCAL ARRANGEMENTS COMMITTEE

PAUL HOFFMAN, *Chairman* KYRLE W. PREIS, *Vice-Chairman*
Z. BERNARD LLOYD†
PAUL A. DEEMS, *Treasurer*

BANQUET AND ENTERTAINMENT

STEPHEN C. HOPKINS, SR., *Chairman*
LEWIS C. TOOMEY, *Vice-Chairman*

JOHN A. CROWLEY	ANTHONY G. MILLER, JR.
HARRY S. GALBLUM	FRANCIS M. MURRAY
STEPHEN C. HOPKINS, JR.	MRS. PAUL HOFFMAN
HAMMOND JOHNSON	MRS. STEPHEN C. HOPKINS, SR.
CHARLES JONAS	MRS. CHARLES JONAS
	MRS. FRANCIS M. MURRAY

PROPERTIES

ROBERT D. SPLAIN, *Chairman*
WILLIAM KRESS, *Vice-Chairman*

LEONARD A. ALTEMUS	THOMAS A. KEELAN, JR.
WILLIAM J. CONLEY	JAMES P. KERRIGAN
LAWRENCE A. FUNT	ANTHONY G. MILLER, JR.
HAROLD H. GILBERT	GERALD J. ROSE
HENRY GILLERS	AARON SCHAFFER

INFORMATION AND TOURS

WILLIAM D. CURTIS, <i>Chairman</i>	
THOMAS J. BLACKWOOD, JR.	LEIGH C. FAIRBANK
WILLIAM P. G. DODSON	STANLEY G. MOORE
JUSTUS D. DUVE	LEONARD SCHLOSSBERG

FERNANDO E. RODRIGUEZ
PRESS

D. ROBERT SWINEHART, <i>Chairman</i>	
FREDERICK R. ALDRICH	FRANCIS M. MURRAY
ARTHUR I. BELL	PHILIP ROBIN
JEROME S. CULLEN	ROBERT W. SWANSON

INTERNATIONAL RECEPTION COMMITTEE

STEPHEN C. HOPKINS, SR., *Chairman*
Vice-Chairmen

WILLIAM R. HUMPHREY, <i>President-Elect</i>	L. BODINE HIGLEY, <i>President</i>
The American Association of Orthodontists	The American Board of Orthodontics
A. FRANK HEIMLICH, <i>Vice-President</i>	CHARLES H. PATTON, <i>President-Elect</i>
The American Association of Orthodontists	The American Dental Association

†Deceased.

COMMERCIAL EXHIBITS

PAUL I. BAUMAN, *Chairman*
LOUIS I. KEREN, *Vice-Chairman*

BERNARD BROWN
LOUIS P. GREENBERG

GORDON S. PUGH
EDWIN T. RICE

REGISTRATION

GEORGE R. CADMAN, *Chairman*
ASHUR G. CHAVOOR, *Vice-Chairman*

PAUL S. DUBANSKY
HAROLD A. ESKEW

HARRY S. GALBLUM
F. SIDNEY HAMMOND, JR.

LADIES' ENTERTAINMENT

CARLOTTA A. HAWLEY, *Chairman*
JOSEPH M. LEMENSE, JR., *Vice-Chairman*

According to our annual custom, we list here the names of the Association's past presidents as well as the current presidents of the various constituent societies:

PAST PRESIDENTS OF THE AMERICAN ASSOCIATION
OF ORTHODONTISTS

EDWARD H. ANGLE, 1901, 1902	P. G. SPENCER, 1937
MILTON T. WATSON, 1903	JAMES D. MCCOY, 1938
LLOYD S. LOURIE, 1904, 1905	CLAUDE R. WOOD, 1942
R. OTTOLENGUI, 1906	EARL G. JONES, 1948
HERBERT A. PULLEN, 1907	LOWRIE J. PORTER, 1949
CHARLES A. HAWLEY, 1908	MAX E. ERNST, 1950
FRANK M. CASTO, 1909	JOSEPH E. JOHNSON, 1951
O. W. WHITE, 1919	BERNARD G. DEVRIES, 1952
JOSEPH D. EBY, 1927	BROOKS BELL, 1953
WALTER H. ELLIS, 1928	JAMES W. FORD, 1954
OREN A. OLIVER, 1930	FREDERICK T. WEST, 1955
CHARLES R. BAKER, 1932	PHILIP E. ADAMS, 1956
W. E. FLESHER, 1933	A. CLAUDE BROUSSARD, 1957
L. M. WAUGH, 1935	FRANKLIN A. SQUIRES, 1958
H. C. POLLOCK, SR., 1936	C. EDWARD MARTINEK, 1959

GEORGE ANDERSON, 1960

PRESIDENTS OF CONSTITUENT SOCIETIES OF
THE AMERICAN ASSOCIATION OF ORTHODONTISTS

Central Section	LEO B. LUNDERGAN
Great Lakes Society	HUNTER I. MILLER
Middle Atlantic Society	KYRLE W. PREIS
Northeastern Society	HENRY C. BEEBE
Pacific Coast Society	E. ALLEN BISHOP
Rocky Mountain Society	WILLIAM A. BLUEHER
Southern Society	M. DUKE EDWARDS
Southwestern Society	JOHN W. RICHMOND

Reports of committees and formal actions on related matters will be published later in the JOURNAL. Officers elected for the current year were as follows:

President, William R. Humphrey, Denver, Colorado.

Vice-President, Cecil G. Muller, Omaha, Nebraska.

President-Elect, Dallas McCauley, Beverly Hills, California.

Secretary-Treasurer, Earl E. Shepard, St. Louis, Missouri.

More reports on the meeting will follow. These will cover such features as the television routine, the presentation of the Ketcham Awards to Drs. Friel and Tweed, the Golden Anniversary Luncheon, and the banquet.

One thing is certain: All who attended are grateful and enthusiastic in their praise of George Anderson and his loyal crew for the fine meeting in Washington.

H. C. P.

SIDE LIGHTS ON THE FIFTY-SIXTH ANNUAL MEETING OF THE AMERICAN ASSOCIATION OF ORTHODONTISTS

GREETINGS to the meeting came from the U. S. State Department and the American Dental Association, and the following telegram was received from the President of the United States:

Apr. 23

Dr. George M. Anderson,

Pres. American Assn. of Orthodontists

Care Shoreham Hotel (Care Asst. Manager on Duty)

Washington, D. C.

It is a pleasure to send greetings to those attending the 56th Annual Session of The American Association of Orthodontists.

The members of this Association bring better dental health and improved appearance to many. Their high professional standards and dedication to continued training provide the basis for further service to the national community.

I am delighted to add my best wishes for a fine meeting.

/s/ DWIGHT D. EISENHOWER.

In the first John V. Mershon lecture, C. Edward Martinek of Detroit, immediate past president of the American Association of Orthodontists, pointed up some interesting views. He felt, from a personal study of his own practice, that about 35 per cent of cases going into overtime treatment were a result of "lack of patient cooperation." He made the impression, too, that the specialty of orthodontics is much in need of better intraspecialty relations among orthodontists themselves. He pointed out that some of the concepts of orthodontics held by the public and by the medical and dental professions are accurate and that others are woefully absurd. Dr. Martinek further said that the importance of mechanistic thinking and appliance systems is declining, and this is no doubt true.

On the subject of "Doctrine and Treatment Methods," C. Philip Adams of Belfast, Ireland, said that the "compromise case," the one which is complicated by many factors and does not fit into any classification, is much more common than is usually reported in the literature and points up the difficulty of formulating a comprehensive orthodontic doctrine. Dr. Adams suggested a wider choice in the use of appliances, so that the simpler removable varieties would be more extensively employed in many cases where they would function as well as the more standard multibanded fixed appliances.

Oren A. Oliver, former president of both the American Association of Orthodontists and the American Dental Association, pleaded for a more cautious approach to the extraction of children's teeth. He posed the question: "What action would one take upon one's own little daughter regarding extracting first bicuspid at an early age?" He plainly felt that the sincere answer to that question might serve as a good yardstick for a part of the answer to this very important speculation in orthodontic treatment. He emphasized that a proper treatment plan at an early age when response to stimulation was greatest would obviate the necessity for many extractions which would otherwise be indicated in cases initially treated at the age of 14. Dr. Oliver thinks that too much emphasis is being placed on the possibilities of esthetic improvements to be obtained through orthodontic treatment. He gave the impression that in his opinion much of the time devoted to taking head measurements could be used to better advantage by developing a more thorough and painstaking visual and physiologic examination of the entire patient and a sharper view of the obvious symptoms revealed by the patient himself.

Charles Tweed of Tucson, Arizona, revealed that in his opinion serial extraction and a more complete understanding of growth potentials would contribute much to the potential goal of being able to meet the demand for orthodontic services that is now increasing by leaps and bounds. He felt that about 80 per cent of the patients in his practice are afflicted with "tongue-thrust" and that none of these patients was breast-fed longer than two months. Dr. Tweed indicated that he is entirely convinced that most cases of malocclusion of the teeth should be treated in the mixed-dentition stage of growth of the dental arches instead of waiting until the deciduous teeth have been shed.

Raymond Begg came from Australia, halfway around the world, to talk about the light wire technique. This technique is obviously the No. 1 subject of general interest as far as appliances are concerned. Those who remembered the Angle pin-tube technique that was introduced in 1911 were reminded of a similarity of perspective presented by the speaker. The appliance is obviously destined for a thorough trial run in America if the wide interest revealed is a criterion.

Each year the American Board of Orthodontics makes available to the program chairman of the ensuing meeting of the Association the outstanding theses from among those submitted at the current session as part of each candidate's examination. From these, one is chosen as being representative of the high caliber of many of these original efforts in investigation and research.

This year Robert M. Ricketts of California was the essayist chosen to present the American Board thesis. His paper was based on findings in 1,000 cases that were studied to provide the range of treatment problems. The variations in problems in jaw relationship and denture position were discussed. A classification for abnormal lip physiology was presented in an effort to reach some idea of muscular problems of the mouth as revealed by the headfilm. He stressed that analysis is not a formula for treatment but a description of conditions that exist. He emphasized the need to take changes into consideration in planning treatment.

Anders Lundström of Stockholm, Sweden, discussed bilateral symmetry in the animal kingdom and made many points that have been given only slight attention by students and authors in America. Dr. Lundström said that gross asymmetry is displayed by organs of the circulatory system and the alimentary canal but that even organs that have a typical bilateral character may also have a fundamental form of asymmetry, as in right- or left-handedness in man. As regards the face and dentition, one finds striking instances of asymmetry, such as unilateral hypoplasia or hyperplasia of the face. A close study of the more common right-left differences in the teeth and jaws brings to light many interesting points.

At this meeting far more was said about the merits of removable appliances than ever before at any meeting of the American Association of Orthodontists. Many obviously believe that there is a place in orthodontic treatment for removable appliances which previously were not well understood. The results that the visitors exhibited with the use of removable appliances were amazing and not heretofore regarded as possible by many Americans.

There were more than 200 general and lecture clinics and round-table discussions, and there were guests from many countries. To describe their contributions, even partially, would be an endless task. Other speakers from abroad were Shelden Friel, Ireland; Kaare Reitan, Norway; A. Martin Schwarz, Austria; James H. Scott, Ireland; Giorgio Maj, Italy; Roger X. O'Meyer, France; Gustav Korkhaus, Germany; Hugo Lager, Denmark; Birger Kjellgren, Sweden; Oscar Hoffer, Italy; Rudolf Hotz, Switzerland; John H. Hovell, England; William Grossman, England; Egil P. Harvold, Norway; Karl Häupl, Germany; R. B. Dockrell, Ireland; Newton de Castro, Brazil; C. Philip Adams, Ireland; and C. F. Ballard, England.

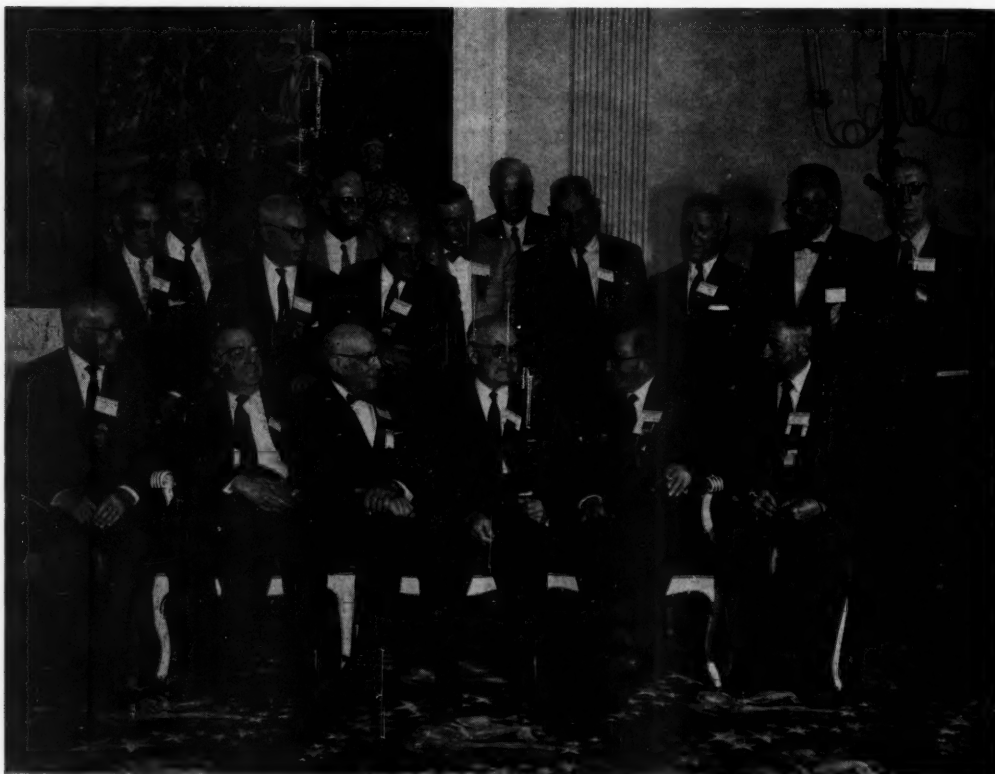
H. C. P.

GOLDEN ANNIVERSARY LUNCHEON

THE American Association of Orthodontists again recognized and honored members who graduated in dentistry fifty or more years ago. This eighth annual event was held in the spacious and beautiful Blue Room of the Shoreham Hotel in Washington, D. C.

A. Frank Heimlich, vice-president of the American Association of Orthodontists, was presiding officer. His opening remarks were as follows:

"It is my pleasant duty to welcome you to the Eighth Annual meeting of the Golden Anniversary Group. It has been impressed on me that I must keep my remarks on the brief side. A short history of this organization should, however, be in order.



Golden Anniversary Group, Washington, D. C., 1960.

Standing: Hugh T. Berkey, Charles R. Baker, Robert H. W. Strang, W. Frank Wilson, Samuel J. Lewis, Thad. Morrison, Sr., Bernard G. de Vries, H. Carlyle Pollock, Sr., Max E. Ernst, Oren A. Oliver, Joseph D. Eby.

Seated: William E. Flesher, Elmer E. Lampert, Andrew F. Jackson, Oliver W. White, Ernest Sheldon Friel, Leuman M. Waugh.

"Credit for originating the Golden Anniversary Group must go to Ernie Bach. He it was who suggested such a luncheon meeting to President Brooks Bell in 1953. A committee was appointed, consisting of Drs. Ernest N. Bach, Lowrie J. Porter, and William R. Humphrey. After an extensive search through old and new directories and programs, and after dozens of personal inquiries, most of those eligible for membership were located.

"The first luncheon was held in Dallas in 1953, with nine Golden Anniversary Group members present. The event has been continued each year and has become a welcome and integral feature of our meetings. At present there are fifty-two members in the Group, with seventeen present at this luncheon. Thirty-one are still in active practice.

"The Golden Anniversary Group luncheon is a splendid idea, honoring as it does men who have spent so many useful years in our profession.

"Dr. Charlie Baker is the 'wheel horse' of the Golden Anniversary Group. Much of its success is due to his untiring efforts. He will now give you a brief annual report and introduce the new members."

Dr. Baker then expressed the genuine thanks and deep appreciation of all of the Golden Anniversary Group members for the recognition and honor bestowed annually by the members of the American Association of Orthodontists.

The following four members of the Group had died since our last meeting:

- 1900 Benno E. Lischer Oct. 9, 1959
- 1907 Joseph L. Selden Oct. 9, 1959
- 1904 Leslie M. Christie Oct. 26, 1959
- 1905 William H. Street Dec. 17, 1959

Heads were bowed for a moment of silent respect for these wonderful characters and good friends.

Dr. Baker reported that the Golden Anniversary Group files now contain more than 100 lantern slides of graduation pictures of members, early officers, student activities, sports, etc., as well as record sheets covering dental and civic activities of each of our former and present members. We have fairly recent photographs of all but two of our members.

The following new members were introduced, and each was given a fifty-year lapel button, which is the emblem of our organization:

- 1910 Bernard G. de Vries, Minneapolis, Minnesota.
- 1909 Ernest Sheldon Friel, Dublin, Ireland.
- 1910 Tullie W. Sorrels, McAllen, Texas.
- 1909 W. Frank Wilson, Mansfield, Ohio.

Lantern slides made from graduation pictures of the new members were then shown, as well as a few other interesting pictures.

Chairman Heimlich introduced our speaker as follows:

"We now come to the highlight of our program. We are privileged to have as our speaker an illustrious guest from Dublin in the Emerald Isle. We are happy that he would embark on such a long journey in order to be with us.

"I am in somewhat of a quandry in presenting our speaker. He has just been introduced as a new member of the Golden Anniversary Group. In a short while he will again be introduced as one of the recipients of the Albert H. Ketcham Memorial Awards. I cannot seem to remember an occasion when a man has been introduced three times in such rapid succession.

"Ordinarily, nice things to say would be used up in three tries, but this is not the case with our speaker.

"He practices in Dublin and is Professor of Orthodontics at Trinity College, University of Dublin. He is an honorary member of several European Dental organizations and holds many important degrees from European Colleges.

"Here is a man ever helpful to those of lesser talents, beloved by his colleagues and outstanding in his professional achievements. May I present Dr. E. Sheldon Friel."

DUBLIN THIRTY TO FIFTY YEARS AGO—TWO OLD CLUBS

E. SHELDON FRIEL, DUBLIN, IRELAND

I do most sincerely thank you for the very kind and flattering remarks you have made in introducing me as a new member, and I also thank the other members for the welcome they have given me.

I was qualified in July, 1909, and went to the Angle School in the fall of that year. After the school, I spent nearly two months in the private practice of Martin Dewey. As I had never been in private practice, it was a great help to me to see how an orthodontic practice was run, and I was indeed grateful for the help that he gave me.

At the beginning of February, 1910, I started as an exclusive specialist in orthodontics in Dublin. At that time, as far as I know, there was only one exclusive practitioner in Europe—the late Axel Lundström of Stockholm, a very good friend and a most capable orthodontist. His paper entitled "Malocclusion of the Teeth Regarded as a Problem in Connection With the Apical Base" was a very remarkable piece of clinical observation and a very great help in knowing what was possible or impossible in orthodontic treatment.

Ireland is on the fringe of Europe and is separated from England by the Irish Sea which, more often than not, is in a turbulent state. Fifty years ago the journey to London was rather an exhausting trip. You left Dublin by train at 8 P.M. for Kingstown, the port from which the mail boat sailed. The boat left at 8:40 P.M., and you got to Holyhead at 12 midnight; if it had been rough, you were very much the worse for wear. Then you had a six-hour train journey, arriving in London at 6:30 A.M. No hotel wants you at that hour, nor do your friends. The best thing to do was to have a bath in the station bathrooms and change your clothes. I used to make this trip two or three times a year to attend meetings of the British Society for the Study of Orthodontics.

This isolation of Dublin (thirty or more years ago) before aeroplane led to the formation of various small clubs—dining, musical, and scientific clubs. I was a member of two of these clubs for many years. One, called the Hibernian Catch Club, founded in 1681, was a singing club; originally it consisted of the Vicars Choral of the two Protestant cathedrals. They used to meet in taverns, have a meal, and then sing catches. A catch is a song, many words of which have a double meaning—one quite a respectable meaning and the other of rather doubtful taste. Such songs could not be sung nowadays and probably have not been sung in the last 100 years. The constitution of the Club has altered considerably during the years of its existence. There are now sixty nonsinging members who pay an annual subscription which pays for the dinners of the singing members. It can be a very enjoyable musical evening.

The second club is the Dublin Biological Club. It was founded nearly 100 years ago by some of the medical staff at Trinity College. They met once

a week in the winter to discuss their problems. Its constitution has also altered during the years. It has now a maximum of thirty-two members—physicians, surgeons of many sorts, pathologist, anatomist, biochemist, physiologist and so on, and one dentist. The rules of the Club are very strict. The members are arranged in alphabetical order. There are twenty-six meetings in the winter. Each member is responsible for the communication on one night. As there are thirty-two members, six escape each year, but they head the list in the following year. A new member has to attend at least fifteen times a year for the first ten years, for the next ten years ten times, and after that five times.



Angle School of Orthodontia, ninth session, New London, Connecticut, 1909.

Top row: E. L. Mitchell, C. C. Mann, F. R. Stathers, Ralph T. Huff, A. L. Hipwell.
Second row: I. B. Stilson, W. J. Johnston, B. W. Weinberger, G. Fletcher, E. W. Swinehart,
L. G. Singleton, C. B. Steadman. *Third row:* R. B. Stanley,* Milo Hellman,* A. H. Ketcham,*
R. C. Osborn,* F. A. Gough,* A. P. Voislavsky,* F. C. Ferris.* *Fourth row:* A. M. Desnoes,*
G. P. Mendel,* Martin Dewey,* E. H. Angle,* E. H. Wuerpel,* F. L. Stanton,* J. Grunberg.*
Bottom row: H. C. Loeffler, E. Sheldon Friel, A. LeRoy Johnson.

*Member of teaching staff.

You cease to be a member if you fail to provide the communication on your specified night or if you have not attended the requisite number of meetings. It was understood that communications should not have been read previously at any other society meeting. The great advantage of the Club was that you heard communications on every aspect of the healing arts and sciences. Sometimes the papers were above the heads of some members, but you knew at any rate what was going on. Nearly every year there was a member who had no biologic subject for his communication, and he was permitted to entertain the

Club by describing his hobby, a sailing holiday, or a mountain expedition in the Alps. One year I had nothing for my night, and so I read a communication that had the barest biologic interest.

The communication was on tea caddies or canisters dating from 1680 to 1820. Tea is a mild stimulant, and that was its only biologic connection. I had a collection of over forty of these caddies. My wife went on strike, and



A.

B.

C.

Porcelain tea caddies of the K'ang-hsi period (A.D. 1662-1722). *A*, Blue lines under glaze, cocks famille verte and red enamels. *B*, Famille verte. *C*, Underglaze blue.



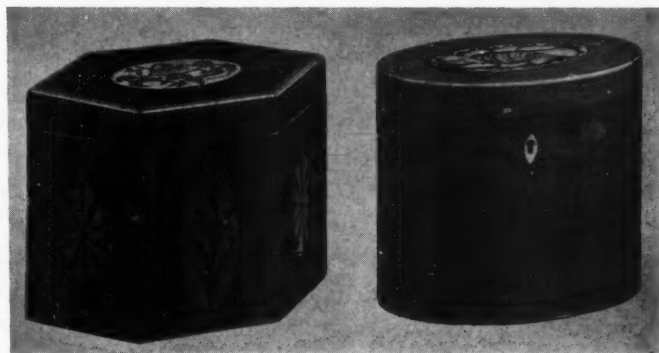
Mahogany veneer on oak. Right- and left-hand canisters for green and black tea, middle canister for the blend. (C. 1750.)

I was threatened with divorce if I brought another into the house. So when I saw one that I could not resist, it had to be hidden behind the books in the bookcase and brought out on some very suitable occasion. The earliest caddies were imported from China. They were blue and white or other colors of porcelain of the K'ang-hsi period (1662-1722). They are rare. The earliest English caddies were of silver and were copies of the Chinese porcelain ones. The earliest silver one that I have seen in a museum was dated 1706. These are very

rare and quite beyond my pocket. From 1750 onward tea became cheaper and was more widely used. The caddies were made of all sorts of woods and other materials, and the shapes followed to a great extent the changes in fashion of furniture. After 1830, the types of caddies deteriorated in design and they were no longer works of art.



Left: Mahogany veneer on yellow deal. Boxwood inlay engraved. (C. 1780.)
Right: Harewood veneer on yellow deal. Tulipwood border and pearwood fan on all sides. (C. 1790.)



Left: Hexagonal caddy of yew wood veneer on yellow pine. Inlaid flower, green stalks, and red blossom on holly ground. Holly fans, sections burnt to get shading on pear-dyed-green ground. (C. 1790.)
Right: Oval caddy of harewood veneer on yellow pine. Inlaid carnations dyed, green stalks, and pink flowers. Shell inlay on top. (C. 1780.)

I will now show slides of a few of my collection of these boxes.

I hope you have not been bored with my address, and I most sincerely thank you for the welcome you have given me as a new member of the Golden Anniversary Luncheon Group.

The lantern slides, in color, were beautiful pictures of interesting objects. Dr. Friel's address was graciously received by the audience of more than 400 members.

A photograph of the Golden Anniversary Group members shows those who sat at the honor table.

TELEVISION AT THE ANNUAL SESSION OF THE A. A. O.

AN INNOVATION at the fifty-sixth annual session of the American Association of Orthodontists was the use of closed-circuit television in several phases of the program. Of course, television has been used before at medical and dental society meetings and has already become indispensable as a teaching aid at many universities. Nevertheless, there were particular problems concerning its use at a meeting of this type. These were solved, however, and the experiment was a success.

As the meeting was being planned, it seemed probable that with Washington so popular as a convention city and with an outstanding program arranged, there might be a record attendance which would tax the facilities of the hotel, particularly during the general sessions. By means of closed-circuit television, the essays could be channeled into a separate auditorium. This was the primary consideration which led to the decision in favor of its use.

After the matter had been thoroughly investigated by General Chairman T. M. Graber and Local Arrangements Chairman Paul Hoffman, arrangements were finally made to utilize the projection type of equipment. The Association is indebted to the Rocky Mountain Metal Products Company and the Unitek Corporation for their generous help in defraying a portion of the cost of installation and rental of the equipment, which amounted to \$4,650.00. The balance was charged against the expenses of the meeting.

The program was at the printer's and in the proof stage before the committee was actually assured that television of the projection type desired was available. Not until then could Dr. Graber proceed with his idea of having two special table clinics also covered by the new medium. This posed additional problems of selecting the clinicians, deciding on the type of clinic, and finding a suitable room for the projection, and the program went to press listing the special clinics as "anticipated." They did materialize, however, with two skilled clinicians participating and were a highlight of the meeting. In order that the equipment might be utilized to the fullest extent, television was made available to one of the limited-attendance-lecture clinicians. This allowed him to augment his presentation and increase its effectiveness by using casts, thus combining the features of a table clinic and a lecture.

In analyzing the results, it must be admitted that in spite of splendid cooperation from the slide projectionists and the television crew, there were many "bugs" the first morning. Surprisingly enough, the projected images of speakers and slides alike were better than expected, but the sound system was not adequate. When this was corrected, the audience in the alternate auditorium was able to enjoy the essays better than from an unfavorable location in the main lecture hall itself.

Certain lessons were learned from this initial venture into television projection of the general sessions. It is absolutely essential to have slides of the

As a matter of reader interest, and because the Washington Meeting of the American Association of Orthodontists was a first for television, the editor of the AMERICAN JOURNAL OF ORTHODONTICS requested a report on this particular phase of the meeting. Paul V. Reid, chairman of the Program Committee, promptly complied with the request, and his report is published herewith.

highest quality if slides are to be used. Care must be exercised in selecting backgrounds. X-ray images lose most of their detail. Typewritten material is too small to be seen clearly on the television screen. Diagrams, if sharply defined in the original, project almost perfectly. In general, the same factors which are important in preparing slides that will be seen clearly at the rear of a large lecture hall will apply to slides which are to be projected via television. These factors are described in Dr. Graber's article entitled "Visual and Auditory Aids: Their Role in National and Sectional Orthodontic Meetings" (*AM. J. ORTHODONTICS* 45: 528-533, 1959). Neither the television cameras nor the bright flood lights seemed to bother either speakers or audience. After the opening session, television was accepted as an integral part of the meeting.

It was probably in its more limited use for projecting the two table clinics, however, that the medium really proved itself. Fortunately, the two clinicians selected for this featured demonstration—Joseph R. Jarabak, experienced in the use of television, and William L. Wilson, trying it for the first time but thoroughly prepared in the technique—gave magnificent demonstrations. The audience of about 250 was able to view a true "table" type of clinic reproduced with surprising clarity on the large screen. The use of television was equally successful at the limited-attendance clinic.

In all three phases of the program, television played its part. The essays were carried to the overflow audience, table clinics were never more effective, and television proved to be a helpful adjunct to the limited-attendance type of clinic. The verdict must be that its use was a success. Certainly, as Dr. Anderson pointed out in his presidential address, the solution to our ever-expanding meetings is not larger lecture halls which seat more people; there comes a limit. Perhaps television is not the answer to that particular problem. It may be necessary to have sections with simultaneous lectures. In the clinic field however, the use of television is limitless. Instead of the milling crowds which now practically swamp the table clinics, selected clinics can be channeled to larger audiences which can view one or several of them with perfect ease and comfort. This makes possible fewer limited-attendance clinics (maybe only four or five instead of twenty to twenty-five). Thus, fewer spaces are required, although a greater congregation area for each larger clinic is needed. Also, it means fewer physical requirements, such as lanterns, blackboards, etc.

At present the cost of using closed-circuit television to the extent that this meeting seems to indicate is feasible would be prohibitive. It may not remain so. It is quite possible that convention hotels will add this to their facilities. The Shoreham Hotel is now in the process of preparing its main rooms for television. The partial defraying of this year's cost by commercial houses points to another source of financing. Whatever the means, television will play an essential role in future meetings. Its effectiveness has been amply demonstrated.

Paul V. Reid, D.D.S., M.S.
1501 Medical Arts Bldg.
Philadelphia, Pa.

ADDRESS BY THE ASSISTANT SECRETARY OF STATE

HON. FRANCIS O. WILCOX, WASHINGTON, D. C.

MY FAVORITE story has to do with a little boy who went to Sunday School for the first time. When he got home his mother asked him how he liked it. He said, "Oh, it was really very exciting."

"What did they talk about?"

"They talked about the passage of Israel across the Red Sea. You know, the people of Israel got up to the edge of the Red Sea and found some of the enemy in front of them. They had to get Moses across somehow, so they put him on a helicopter and took him across. Then some of the leaders got on an atomic powered submarine, and they dived underneath and got across; and the people of Israel, they put them on ships of the line and blasted their way through with atomic missiles. It was really a very exciting story."

The mother, somewhat taken aback, said, "Johnnie, are you sure they told you that in Sunday School?"

"Well, Mommie," he said, "maybe they didn't, but if I told you what they told me you never would believe it."

I am sure that you believe me when I say to you that I am delighted to have this opportunity to welcome this distinguished international gathering of orthodontists to Washington on behalf of the Department of State and the United States Government.

I have here a telegram which I should like to read at this time. It is addressed to Dr. George M. Anderson, President of the American Association of Orthodontists, and it reads as follows:

It is a pleasure to send greetings to those attending the 56th Annual Session of The American Association of Orthodontists.

The members of this Association bring better dental health and improved appearance to many. Their high professional standards and dedication to continued training provide the basis for further service to the national community.

I am delighted to add my best wishes for a fine meeting.

/s/ Dwight D. Eisenhower.

During the current week your group, consisting of representatives from thirteen different countries, will be studying improved methods which have been developed in the field of orthodontics. This meeting certainly offers a splendid opportunity to contribute to human betterment. You will be participating in meetings and discussions which relate to matters of deep concern to mankind everywhere.

Meetings of this kind, as you know, are relatively new. In the past—in fact, up to the last century—nations normally resorted to international conferences primarily in connection with the larger problems of war and peace. However, with the development of new means of communication and transportation, the world community began to use the international conference as a forum for discussion of common problems in the scientific and technological fields. In

our present era the international conference has developed into a standard operating procedure among both governmental and nongovernmental organizations for promoting the well-being of mankind in an almost endless number of areas, including the political, social, economic, scientific, medical, and industrial and commercial fields. It has assumed major importance as a means of sharing man's knowledge and expanding his horizons.

Your meeting provides an excellent example of this type of conference. Here you will exchange knowledge and new ideas. These exchanges will benefit each of you in the practice of your great profession. Equally important, you will discuss problems common to the professions of your respective countries. I have no doubt that the results of your deliberations will be widely disseminated in your own countries and to your colleagues in many other areas of the world. As a result, peoples everywhere will stand to benefit, either directly or indirectly, from what you do and say here.

But if the science of orthodontics is important today, it promises to be even more important in the years that lie ahead. In your lifetime and mine, if present trends continue, this world of ours will be developing at a fantastic tempo. Population is increasing at such an explosive rate that man will be confronted with a tremendous challenge in providing food, clothing, and adequate medical and health care for our teeming billions.

It is estimated that every week now 1.8 million new births occur. Every hour that passes welcomes 11,000 new babies into the world.

United Nations studies have stated that: "Barring either a catastrophe or a deterioration of social conditions for progress in health, of global proportions, a world population of between 6 billion and 7 billion by the end of the century should now be expected as a matter of practical certainty."

If the world population grows from less than 3 billion today to 6 or 7 billion by the year A.D. 2,000, that will indeed be a "population explosion."

This is certainly a sobering thought, but it does make us appreciate perhaps a little more the dimensions of the challenge we face in looking at some of our health problems on a world-wide basis.

International cooperation in the field of health among governments also has been reaching wider dimensions in a most encouraging way. I refer specifically to the work of the World Health Organization, one of the specialized agencies of the United Nations.

The WHO, which observed its tenth anniversary in 1958, is making a substantial contribution to protecting the health and welfare of peoples everywhere. It is playing a front-line role in the war against debilitating diseases which lower or totally destroy productivity and mean poverty and despair to millions of people.

This organization of ninety countries can take credit for a record of solid achievement—achievement which has been attained only through a joint cooperative effort by doctors, scientists, and public health administrators from nations throughout the world. As a result of the lead taken by the WHO and other agencies in the eradication of malaria, millions of people have already

been saved from this scourge of mankind. Significant progress is being made in reducing tuberculosis. Mass campaigns against yaws have confirmed the practicability of eradicating this seriously crippling disease. Given continued support for the work of the WHO, there is real hope that many man-destroying diseases can be brought under control and perhaps even wiped from the face of the earth.

The United Nations Children's Fund is another example of an international organization devoted to the promotion of health. This organization has made a permanent contribution to the welfare of large numbers of children, particularly in underdeveloped countries, through support of maternal and child welfare services and training, disease control activities, and child nutrition programs. UNICEF aid now reaches directly some 55 million children and mothers in more than 100 countries and territories. In addition, other millions benefit indirectly through UNICEF-equipped health centers and hospitals and through other long-range programs.

People today recognize the vital importance of international cooperation by both governmental and nongovernmental organizations in the field of medicine and health. Their international conferences seldom make front-page headlines, and their efforts are carried on without a great deal of fanfare, but the results of these efforts are equally, if not more, important in the long pull than many of the drama-packed conferences of the diplomats and statesmen. Through cooperation of this kind, we can make significant contributions to the creation of those conditions in the world which will form the bases of a lasting peace. The political bickerings of ancient Greece are all but forgotten, but the Golden Age is still remembered for its brilliant and lasting contributions to the arts and sciences.

Today you are meeting here not only as scientists but also as representatives of countries which have contributed substantially to the advancement of mankind everywhere. I congratulate you on the splendid job you are doing, I hope you have a pleasant stay in our country, and I wish you every success in your deliberations.

PRESIDENT'S RECEPTION AND BANQUET

THE president's reception and banquet took place on Wednesday evening April 27, 1960, at the Shoreham Hotel. The reception was held in the lower lobby of the hotel, and the receiving line was composed of A. A. O. President and Mrs. George Anderson and their sons, Dr. and Mrs. Dallas McCauley, Dr. and Mrs. Earl Shepard, Dr. and Mrs. William Humphrey, and Dr. and Mrs. Frank Heimlich.

Following the reception, the members moved to the Terrace Ballroom and took their places. At the head table were Dr. and Mrs. Anderson, Dr. and Mrs. Heimlich, Dr. and Mrs. Humphrey, Dr. and Mrs. Shepard, Dr. and Mrs. McCauley, Dr. and Mrs. Hopkins, Sr., Dr. Higley, and Dr. and Mrs. Graber, Dr. Friel, and Dr. and Mrs. Tweed.

Members of the American Board of Orthodontics and their wives were seated at tables immediately below the head table and bordering the dance floor. The presidents of the sectional societies and their wives and visiting presidents of foreign orthodontic societies were seated in the same area. Farther away from the head table, but still adjacent to the dance floor, were seated the foreign visitors and clinicians and their hosts. Dinner consisted of fruit cup au maraschino, celery and olives, consommé julienne, roast beef, broccoli hollandaise, duchesse potatoes, and hearts of lettuce with French dressing. When the dessert was served, all the lights were extinguished and the waiters paraded in carrying Spumoni Bombes on ice blocks. With the dinner, a delicious Napa Almaden claret was served.

Following the dinner, introductions were made by Dr. Anderson. For each of the foreign delegates, appropriate music was played and many circled the floor to their national tunes. After these introductions, Dr. Martinek presented the past-president's key to Dr. Anderson in appreciation of his excellent work as president. At the conclusion of this ceremony the floor was turned over to Dr. Hopkins, who introduced the Precisionists. This group entertained us with several fine selections of the barbershop variety. Following this, Julian Altman's Orchestra, featuring Helen Meyer at the piano and songstress Gloria Dawson, played for dancing.

It was a very successful evening, and many thanks are due Chairman S. C. Hopkins and his committee, Lewis Toomey, Francis Murray, Hammond Johnston, Anthony Miller, Harry Galblum, John Crowley, S. C. Hopkins, Jr., Charles Jonas, Mrs. Jonas, Mrs. F. M. Murray, Mrs. T. J. Blackwood, Mrs. S. C. Hopkins, Sr., and Mrs. Paul Hoffman.

T. Blackwood.

A. A. O. GET-TOGETHER

On Sunday evening, April 24, 1960, at the Shoreham Hotel in Washington, D. C., there was a cocktail party and buffet supper for members and guests of the American Association of Orthodontists. The cocktail party was held in the Terrace Ballroom of the hotel, and the buffet was set up in the Blue Room and lower lobby.

During the cocktail party the reunion with old friends and the excellent supply of liquid refreshment served as sufficient entertainment. The delicious and attractive buffet was highlighted, however, by music provided by the Silver Fox Trio, consisting of two pianos and a violin. Attendance at the buffet numbered 692.

Chairman Steve Hopkins and his committee deserve the highest praise for their work.

T. Blackwood.

MEETING OF THE AMERICAN BOARD OF ORTHODONTICS

THE American Board of Orthodontics held its annual six-day meeting in Washington, D. C., April 18 through April 23, 1960, for the purpose of conducting routine business and examining candidates aspiring to certification.

The unanimous choice for the new director to be appointed to the Board was Nathan G. Gaston of Monroe, Louisiana. Dr. Gaston replaces L. Bodine Higley, whose seven-year term of office expired at the time of the Washington meeting. Dr. Higley served as president of the Board during his final year of service and as vice-president the year before.



THE AMERICAN BOARD OF ORTHODONTICS.

In the final session the Board adopted by acclamation the following tribute:

Bo: We, your fellow Directors of the American Board of Orthodontics, wish to take the opportunity before you bring this final session of the Board to a close to express our thanks to you for the most efficient manner in which you fulfilled the office of President of the Board. But more than that, we would like you to know that we consider it a privilege to have served with you. Your vast experience as an educator, research worker, and contributor to orthodontic literature was fully evidenced in your contributions to the proceedings of the Board and in your fairness in the handling of candidates who appeared before us for certification. We shall miss your dry sense of humor which helped to enliven our task. We sincerely hope that you will subscribe to the dictum "Once a Board member, always a Board member," so that we may have the pleasure of seeing you at our future meetings. We wish you continued success in all your endeavors.

Certification was granted to thirty-six candidates as follows:

Herbert L. Adelstein
Roland M. Anderson
Alfred T. Baum
William D. Berg
Murray Bernstein
James H. Bolton
W. Burnie Bunch
William L. Casey
Malcolm R. Chipman
Martin L. Dean
Harold A. Eskew
Harold Fischer
Robert C. Flowers
William F. Ford
Kenneth H. Fried
Richard A. Gaard
C. Homer Garson
Leonard Gorelick

Oliver E. Hartman
Robert J. Henns
Sidney L. Horowitz
James R. Hull, Jr.
Jack Magill
Lawrence G. Osborne
William W. Paden
Kenneth M. Platzer
Jack A. Rampton
George Redmond
Neal M. Roth
Willis F. Sage
Nicholas J. Santaniello
Mason E. Seibel
Gustave H. Sheldon
Benjamin L. Spector
Raymond C. Thurow
Raleigh T. Williams

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Report

REPORT OF THE GENERAL CHAIRMAN, 1960 SESSION, AMERICAN ASSOCIATION OF ORTHODONTISTS

INASMUCH as the specific details of the 1960 meeting in Washington are being covered in the reports of Paul Reid, Program Chairman, and Paul Hoffman, Local Arrangements Chairman, the report of the General Chairman is of a general nature and consists largely of observations based on preparation for the 1960 meeting. What actually transpires may well modify these thoughts.

It was undoubtedly intended that election to the presidency be a signal honor to our distinguished members who have given so much to the development of our Association. It is that, but, judging from the untiring efforts of President George Anderson, it has also become a chore. Some thought should be given to reducing the load for men who occupy this position in the future. Maintaining relations with the American Dental Association, constituent societies of our own organization, federal agencies, etc., running a meeting, attending constituent society meetings, and correlating the efforts of all those serving the American Association of Orthodontists requires much time, voluminous correspondence, many long-distance telephone calls, a lot of travel, considerable time away from home and practice, and much personal expense.

Our organization is getting so large that the responsibility of running the annual meeting becomes more demanding each year. With a "new team" each year, the work load is spread out, but there is the distinct disadvantage that each new group must learn the ropes, and much effort can be wasted in the process. Consideration should be given to retaining the services of a convention-planning service. A study of how this problem is handled by the American Dental Association, the American Medical Association, and the various component groups of a size comparable to ours would be beneficial.

More thought should be given to auditorium or meeting space per se for future meetings. We have outgrown most hotel facilities. No longer can we expect to be a one-hotel unit, as has become quite apparent from the Washington meeting. Perhaps city auditoriums, meeting halls, etc. might be a possibility for the general sessions. (The American Medical Association, for example, has done this.) Closed-circuit television may relieve this problem, if used properly, but viewing slides or TV screens in large rooms becomes increasingly unsatisfactory. Perhaps the answer is to eliminate all but one or

two general sessions and divide our meeting into sections. Or essayists may be required to deliver their papers twice. Cramming more people into larger rooms does not seem to be the answer.

The future status of such meeting aids as closed-circuit television should be studied by the Board of Directors, and a policy, should be established. Should we expect the commercial exhibitors to carry the load? (It is \$4,600.00 this year.) Should we turn to pharmaceutical houses for help, as some branches of medicine do? Is there a question of propriety in any commercial support? Should the A.A.O. make provisions to support TV in its own budget? These are just some of the answers that must be found soon.

The problem of guests for annual meetings is critical. The rules seem clear enough, but the pressure of numbers is tremendous. How many should we admit? Should we encourage student attendance? Should we make provision for special requirements for preceptees? Should we set a definite limit? I think that there is danger of having too many nonmembers who would fill up the more desirable clinics, take hotel space, etc., and prevent our own members from gaining the most from each session. (There were 393 at the Washington meeting and a couple of hundred were turned away.)

The possibility of having an auditor go over the books for each annual meeting should be explored. Meetings are "big business" when more than \$10,000.00 is taken in for commercial exhibit space. Our tax status, in the light of the recent Mershon Award tax decision, should be carefully studied. Strenuous efforts should be made to convince the Internal Revenue Service that we are a nonprofit, scientific, and educational organization and that such receipts are only to sustain this goal.

It is suggested that thought be given to staging postgraduate short courses in conjunction with the annual A.A.O. meeting, under the auspices of the A.A.O. These could be immediately prior or subsequent to the actual meeting. Outstanding essayists and clinicians, along with persons from certain basic sciences, could be used for such courses. It seems wasteful to bring men from halfway around the world so that they can deliver a forty-five-minute essay. Our associateship training program could be augmented considerably by requiring trainees under the program to attend one or more such courses. Our own members would benefit, as is obvious. Our status as a nonprofit, scientific, and educational organization in the eyes of the Internal Revenue Service would be enhanced.

The General Chairman wants to take this opportunity to express his heartfelt gratitude to all those who have worked to make the 1960 Washington meeting the success it appears to have been. Under the inspiring leadership of Dr. Anderson, all of us have tried to give the members the kind of meeting they want. To Dr. Erikson, the vice-chairman, who stepped in and did so many jobs that required immediate action, to Dr. Reid, who toiled over a program on a truly international scale, to Dr. Bowyer who worked out and presented an afternoon of limited-attendance clinics that will long be remembered for their interest, personalities, variety, and professional stimulus, to Dr. Gaston, clinic

chairman who staged over fifty exciting and provocative table clinics, not the least being a television "first," and to Dr. Hoffman and all his able and efficient Local Arrangements men, who fought all the battles of running the largest meeting in our history (over 2,700 in attendance) and taking care of facilities, reservations, equipment, etc., the Association owes a debt of gratitude. These men would be the first to say that what they have done reflects the dedicated guidance of President George Anderson and would not have been possible without the untiring efforts of the committeemen.

Respectfully submitted,

T. M. Graber, General Chairman.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmnn, 654 Madison Avenue, New York.

Abstracts of Papers Presented Before the Research Section of the American Association of Orthodontists Washington D. C., April 26, 1960

Regression Lines for Facial Growth Rates From 4½ to 15½ Years: By
Rodney Beresford Dockrell, Dublin University, Dublin, Ireland.

The material for this investigation consists of the following measurements: auricle to nasion, auricle to superior alveolar point, auricle to menton, bizygomatic width, nasion to menton, and nasion to superior alveolar point. In all, 259 sets of the six measurements were made on girls and 278 were made on boys, roughly one-third of the measurements consisting of one set of measurements made on a single child, roughly one-third of two sets of measurements made on the same child at three- to six-year intervals, and one-third of three sets of measurements made on the same child at three-year intervals. The children were from 4½ to 15½ years of age and lived on the largest of the Aran Islands off the west coast of Ireland. These islanders consist of a population of farmers and fishermen, and previous investigations show that they are of mixed but mainly British descent, intermarried lately with the native Irish stock.

Scatter diagrams were constructed, and the fits of first-, second-, and third-degree regression lines were compared with one another and with the correlation ratios for the mean of each year group. These showed no significant difference between the coefficients for the first-, second-, and third-degree lines, or between them and the group mean ratios with the exception of the measurement auricle to superior alveolar point in girls, where a significant difference at the 1 per cent level was present between the first-degree correlation and the others.

There is no tendency for these children to exhibit growth spurts between these ages. Individual children may be showing spurts but, if so, these must be at such different ages as not to show. This latter is unlikely, as growth spurts imply a triggering mechanism and such a mechanism must show a tendency to centralize at a given age or ages.

3 FITZWILLIAM PL.
DUBLIN, IRELAND.

Features of Upper Facial Development and Growth: By Andrew D. Dixon,
Department of Anatomy, University of Manchester, Manchester, England,
and University of Iowa, Iowa City, Iowa.

Development of the upper facial skeleton has been studied with particular reference to a comparison of upper and lower jaw developmental patterns in a graded series of eighteen serially sectioned human embryos and fetuses, beginning with the 15 mm. C.R. length stage. Findings suggest that the jaws may

be considered as a unit in the developmental sense, as well as in the functional sense, for they begin their existence in mandibular arch derivatives and continue to develop in association with structures which are comparable in both jaws. Both the maxilla and the mandible commence as centers of ossification which are closely related to corresponding terminal branches of the infra-orbital and inferior dental nerves. Both bones possess neural and alveolar elements, develop secondary cartilages in their posterior extensions, and depend for their early support or derivatives of the chondrocranium.

Serial contact autoradiographs prepared from the dried skulls of growing rats following intraperitoneal injection of radioactive calcium (2.5 to 10 microcuries per 100 grams of body weight) emphasize mechanisms of upper jaw growth. From a comparison of autoradiographs produced in various planes, the dependence of the maxilla on surface deposition and growth at sutures is apparent. Evidence is provided for downward growth of the hard palate, increase in dental arch width, and the importance of cartilaginous sutures in the cranial base in the attainment of adult jaw dimensions.

Expansion of Maxilla. Spreading the Midpalatal Suture; Measuring the Widening of the Apical Base and the Nasal Cavity on Serial Roentgenograms: By N. A. Hugo Thörne, L.D.S., Assistant Chief, Orthodontic Department, Eastmaninstitutet, Eastman Dental Clinic, Dalagatan 11, Stockholm, Sweden.

The spreading of the suture has been performed with a fixed screw plate. Twenty-eight cases were followed by means of serial occlusal roentgenograms taken with the subject positioned in the cephalostat. Focus-cephalostat distance (midpoint of the line connecting the ear posts) was 650 mm. The orbital pointer was set at the lateral corner of the eye. The x-ray tube was tipped down to an angle of 40 degrees from the horizontal.

The width of the apical base was measured on the occlusal film between the apices of the lingual roots of the left and right first or second molars with the aid of dividers, a binocular loupe, and a land surveyor's transverse scale capable of measuring to an accuracy of 0.1 mm. The nasal width was measured between the left and the right contours representing the lateral walls of the nasal cavity. The standard error was ± 0.16 mm. for the nasal cavity width and ± 0.15 mm. for the apical base width.

In all measured cases the apical base was found to be widened between 1.3 and 6.5 mm. and the nasal cavity width between 0.4 and 5.7 mm.

The cases were retained for different periods. One to two years after retention twenty-three of the cases showed either no change or an increase in the gained apical and nasal cavity widths from 0.0 to 6.5 mm. and 0.0 to 2.9 mm., respectively. Five cases which had had practically no retention period or a very short one showed a decrease in the gained apical and nasal widths.

Tissue Response to Tooth Movement in Normal and Rachitic Rats: By Paul Benjamin Johnston, University of Pittsburgh, Pittsburgh, Pennsylvania.

This experiment was undertaken in an effort to study the variations, if any, in tissue response to the orthodontic type of tooth movement in normal and rachitic rats.

In this study sixteen rats were divided into two groups: a rachitic or experimental group and a normal or control group. All the animals were fed Steenbock's # 2965 rachitogenic diet. The normal group was given orally a daily supplement of calciferol (vitamin D₂) in order to produce a nutritionally balanced diet. Tooth movement in the rats was accomplished by inserting rubber elastics, 0.8 mm. wide, gingivally to the interproximal contact points

between the maxillary first and second molars on the left side. The opposite side of the maxilla served as a control side. Three days following placement of the elastics, the animals were sacrificed and histologic slides of the maxillae were prepared.

The tissue reaction to this tooth movement was studied microscopically. Comparisons were made by histologic means and also by measuring the width of the periodontal membranes and statistically evaluating these widths. The degree of rickets in each animal was determined by radiographing the right hind legs and observing the radiolucent areas of the epiphyseal discs of the tibia. The widths of these discs were measured and then compared on a scale representing the degree of rickets.

The study revealed that (1) rat molars have a physiologic distal drift, (2) rachitic rats have narrower periodontal membrane spaces than normal rats, and (3) abnormally large amounts of osteoid tissue present in rachitic rats tend to inhibit tooth movement.

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NEW KENSINGTON, PA.

A Study of the Orthodontic Type of Tooth Movement in Normal, Hypothyroid, and Hyperthyroid Rats: By Armand G. Dalmass, University of Pittsburgh, Graduate School of Dentistry, University of Pittsburgh, School of Dentistry (Orthodontics Department), Pittsburgh, Pennsylvania.

This study represents an attempt to determine the correlation, if any, of early tooth movement of the orthodontic type in normal, hypothyroid, and hyperthyroid rats.

Sixty littermate rats of the Long-Evans strain were divided into three groups, with the sexes evenly divided. At 40 days of age a mean basal metabolic rate of the animals was recorded as being 15.03 for males and 12.58 for females. The Group 1 animals were placed on a 0.1 per cent propylthiouracil diet to induce hypothyroidism. Group 2 animals were placed on a diet with 100 μ g of L-triiodothyronine added to 100 ml. of drinking water. Group 3 was maintained on a standard Rockland rat diet. After ten days, Group 1 revealed a mean B.M.R. of 12.90 for males and 10.76 for females. Group 2 had a mean B.M.R. of 43.00 for males and 39.00 for females. Group 3 had a mean B.M.R. of 20.85 for males and 18.26 for females.

A 0.5 mm. rubber elastic was inserted interproximally to the left first and second maxillary molars under ether anesthesia. One-half of the animals in each group were killed after twenty-four hours, and the remainder were killed after seventy-two hours.

Histologic sections of the retained maxillae and teeth were prepared and studied. The mean change in periodontal membrane widths of the maxillary molars at both the cervical and the apical levels between the experimental and control sides of each section was measured. A statistical comparison of the twenty-four hour specimens of the normal, hypothyroid, and hyperthyroid rats failed to reveal any differences in the amount and type of tooth movement. A statistical comparison of the seventy-two-hour specimens has not yet been completed.

An Electromyographic and Cephalometric Radiographic Investigation of the Orofacial Muscular Complex: By Lewis Gordon Nieberg, University of Kansas City, Kansas City, Mo.

An electromyographic and cephalometric radiographic investigation of the orofacial muscular complex was made with a Grass electroencephalograph,

Model III-D, and a standard cephalometric setup. The subjects, twenty-nine Caucasian children between the ages of 8 years 0 months and 12 years 11 months, were selected at random.

The following conclusions have been drawn from observations and study of the collected data.

1. A reliable method of obtaining accurate electromyographic records of the action potentials of the orofacial muscles has been developed.

2. A means of accurately measuring clinically observed overjet has evolved.

3. In patients with a low IMPA and in those with a high IMPA there was a predominance of the lower lip musculature. Those subjects with the lower angulation exhibited considerably more activity.

4. The most active maxillary lip musculature was noted in patients with a longer lip, the upper lip measuring one-half or more of the total lip length.

5. No correlation existed between lip length and degree of proclination of the maxillary incisors.

6. Contraction of the mentalis musculature was predominant in those patients with the larger mandibular sulcus.

7. Patients with a large facial angle (FHNP) demonstrated an increased frequency, a rise in amplitude, and a sustained period of contraction during the articulation of various speech sounds.

8. The mesiodistal relationship of the maxillary and mandibular first permanent molars did not appear to be a reliable basis for comparison of perioral muscle function. A more sound method of collating the activity of musculature surrounding the oral cavity seems to be based on the amount of linear overjet and the degree of proclination or retroclination which exists.

9. Three basic patterns of deglutition exist:

- (a) The first pattern, which will be called "normal," exhibited marked contraction of the masseter muscles and limited activity from the labial and mentalis musculature.
- (b) The second pattern, which has been referred to as "visceral type," demonstrated little or no activity from the masseter and considerable contraction of the mentalis muscles. Slight activity was evident in the mandibular orbicularis oris.
- (c) The third pattern manifested marked activity of the lower lip and mentalis muscles and considerable contraction of the maxillary orbicularis oris. Masseter activity was at a minimum.

10. Many children maintained a rest position with their lips parted. In this position little or no activity was recorded from the perioral musculature. When the lips were brought into contact, however, notable muscle activity was displayed.

11. No correlation existed between incompetent lip posture and the Frankfort mandibular angle.

12. Both the maxillary and the mandibular orbicularis oris muscles functioned as separate and individual muscle entities.

13. Parallelism of muscle behavior often existed between the mandibular orbicularis oris, the mentalis, and the suprahyoid muscles.

14. The suprahyoid muscle group contracted with greater force when depressing the mandible than when raising the hyoid bone.

15. Variations in the function of the suprahyoid musculature seemed to be due to individual factors which varied from one subject to another.

280 MAMARONECK AVE.
WHITE PLAINS, N. Y.

News and Notes

American Association of Orthodontists Denver Hotels

The Denver Hilton Hotel in Denver, Colorado, will be the headquarters for the next meeting of the American Association of Orthodontists, which will be held April 16 to 21, 1961.

A survey made by the Colorado Visitors Bureau showed that more than \$80 million has been spent on improving and expanding Colorado's visitor accommodations since 1956, with a net addition of more than 6,000 new visitor units.

Construction of major new facilities was capped this spring with the opening of the new Denver Hilton Hotel, an 884-room, \$22 million structure which towers twenty-two floors above the heart of downtown Denver. The Hilton now is the largest single visitor structure in Colorado.

Other recent and major facilities completed in Colorado include a 288-room addition to Denver's Brown Palace Hotel; the 200-room Harvest House, a country club type of hotel in Boulder; and scores of luxurious new highway hotels, with capacities of 25 to 200 rooms.

On the drawing boards is major expansion of the famed Broadmoor Hotel at Colorado Springs. The Broadmoor project will add 200 rooms and provide other new convention facilities for groups of up to 1,200 persons.

Several comparative newcomers have made their appearance on the Colorado travel scene in recent years.

Highway hotels have appeared on principal highways in or near all the state's major cities. These establishments, featuring restaurants, lounges, swimming pools and, in many cases, sizeable public meeting facilities, offer up to 200 rooms, and some offer shopping facilities.

A second type is the downtown "auto hotel" type of establishment. More than a dozen such facilities have been built within the past year within walking distance of downtown Denver. They offer up to 125 rooms.

A third development is the "airport" hotel aimed at serving hordes of new air travelers. Two such facilities, with 50 and 150 rooms, respectively, have been opened near Denver's Stapleton Airfield, and a third is in the planning stages.

Summer prices of all such facilities range from \$8.00 to \$20.00 for a single room and commensurately more for a double room.

The new accommodations add appreciably to the 2,700 previously existing visitor establishments in Colorado. These range from fishing camps to family-style dude ranches to motels to cottage camps to city hotels and resorts, with a complete range of prices.

Always popular with vacationers is the wide assortment of dude ranch facilities offered in Colorado. Some of these still are combined with commercial livestock operations and offer guests the chance to get out and work the stock with real live cowboys. Others have been modernized to the extent of providing swimming pools, planned entertainment, lounges, and European plan restaurants. All still provide traditional elements of the western ranch vacation—riding, pack trips, seclusion in beautiful mountain areas, fishing, steak fries, and campfires.

For the swift-moving traveler, hundreds of modern, well-appointed motels dot the highways leading into every town and city.

Complete information about Colorado's accommodations may be obtained by writing to Dept. AC, The Colorado Visitors Bureau, 225 West Colfax Ave., Denver 2, Colorado.



Denver, Colorado, where the next annual meeting of the American Association of Orthodontists will be held April 16 to 21, 1961. Headquarters will be the fabulous new Denver Hilton Hotel.

The snow-capped Rockies form a spectacular backdrop for the shining new skyscrapers of downtown Denver. At far left is the Queen City's Civic Center. In center is the new twenty-two floor, 884-room Denver Hilton Hotel. Immediately below the hotel is the gold-domed Colorado State Capitol Building, flanked by state office and service buildings. Tallest buildings at right center are the Denver First National Bank Building and the Denver-U. S. National Bank Building. Sandwiched between them is the new 288-room addition to the Brown Palace Hotel.—Colorado Visitors Bureau Photo by O. Roach.

American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Denver Hilton Hotel in Denver, Colorado, April 10 to 15, 1961. Orthodontists who desire to be certified by the Board may obtain application blanks from the secretary, Dr. Alton W. Moore, University of Washington School of Dentistry, Seattle 5, Washington.

Applications for acceptance at the Denver meeting, leading to stipulation of examination requirements for the following year, must be filed before March 1, 1961. To be eligible, an applicant must have been an *active* member of the American Association of Orthodontists for at least two years.

Central Section of the American Association of Orthodontists

The Central Section of the A. A. O. will hold its annual meeting Sept. 18 to 20, 1960, at the Park Plaza Hotel in St. Louis, Missouri. The scientific program follows.

Monday, September 19

Different Types of Anchorage Used With the Twin Wire Mechanism. Joseph E. Johnson, Louisville, Kentucky.

Case Report. Charles M. Taylor, Crockett, Texas.

The Problem of the Rotated Maxillary First Permanent Molar. Frank F. Lamons, Atlanta, Georgia.

Practice Administration in Orthodontics. C. Edward Martinek, Detroit, Michigan.

Tuesday, September 20

Putting Cephalometric Films to Work; Two Time-Saving Techniques. Raymond C. Thurow, Madison, Wisconsin.

Orthodontics as Practiced in Australia. Robert Y. Norton, Sydney, Australia.

Case Report. Fay O. Wardlaw, Little Rock, Arkansas.

Great Lakes Society of Orthodontists

The Great Lakes Society of Orthodontists will hold its annual meeting Nov. 27 to 30, 1960, at the Netherland-Hilton Hotel in Cincinnati, Ohio.

Middle Atlantic Society of Orthodontists

The next annual meeting of the Middle Atlantic Society of Orthodontists will be held in Atlantic City, New Jersey, Oct. 9 to 11, 1960, at the Chalfonte-Haddon Hall.

Pacific Coast Society of Orthodontists*

CENTRAL COMPONENT

The Central Component was host to the biennial meeting of the Pacific Coast Society at a three-day conclave at Rickey's Garden Hotel in Palo Alto. The hard work was preceded by a cocktail party on Sunday, February 21, attended by members, guests, and wives. Under the able chairmanship of Eugene West, a varied and interesting program was unfolded.

Monday, with Denton Rees as chairman, four widely different subjects were discussed in papers presented by Sam Pruzansky of the Department of Orthodontics and Cleft Palate Clinic of the University of Illinois, and Ben H. Reed, the executive secretary of the Public Health League of California, discussing "Why the Increasing Interest in Congenital Malformations" and "How Legislation Affects Dentistry," followed in the afternoon session by Elbert King of Albuquerque and Robert Payne, director of the Charles Tweed Foundation, speaking upon "Treatment Timing, Growth and Improvement Potential for Class II Malocclusion" and "Case Analysis and Treatment Planning in the Permanent Dentition."

SOUTHERN COMPONENT

On Jan. 11, 1960, Dr. Harvey Stallard of San Diego was honored as "Dentist of the Century" by his component dental society. Long ago Dr. Stallard made a name as an outstanding orthodontist in education and research. Now he is being honored for civic achievement and for his many years of service to the dental profession. To quote the *Bulletin of the San Diego County Dental Society*, "In naming Dr. Stallard Dentist of the Century, the San Diego County Dental Society has said that no man within its ranks has done so much for his profession, his community and fellow man as Dr. Stallard."

*Excerpts from the *Bulletin* of the Pacific Coast Society of Orthodontists.

Dr. Stallard has been a member of the Southern Component since 1925. He will be one of the featured speakers on the December meeting of this component.

On June 20 the Southern Component met jointly with the Central Component at the Fairmont Hotel, in San Francisco. The guest speaker was the noted Dr. Raymond Begg of Adelaide, Australia.

HAWAII SOCIETY OF ORTHODONTISTS

The first meeting of 1960 was held on Monday, Jan. 18, 1960, at Ciro's Restaurant. The presiding officer was Dr. Minoru Wakatake. Plans were made for the meeting with Dr. Raymond Begg and the University of Southern California group of Drs. Cecil Steiner, Howard Lang, Alfred Heimlick, Everett V. Hunt, Gerald Milliette, Harry H. Bleecker, and Townsend Paul.

On Thursday, March 24, the Hawaii Society of Orthodontists met with Dr. Raymond Begg, who gave a very interesting lecture on his technique with the use of light round wires. His lectures were supplemented with "before and after" models, photographs, and slides. In the evening Dr. and Mrs. Begg were guests of the Society to a Tea-House party.

On Wednesday, April 6, at 8:30 A.M. a special meeting was called to order by President Wakatake at the Blackfield Enterprise Bldg. The meeting was turned over to the program chairman, Dr. Masunaga who introduced the speakers, Dr. Cecil Steiner and Dr. Howard Lang. Dr. Steiner gave a brief review of the Steiner analysis, and the rest of the day was spent on "Serial Treatment and the Indication and Contraindication of the Cervical Gear." Slides were used to supplement the lecture. After a question-and-answer period, the meeting was adjourned at 4:30 P.M.

On Thursday, April 7, another special lecture meeting was held at 8:30 A.M. Speakers were Dr. Alfred Heimlick ("Orthodontic Photography"), Dr. Gerald Milliette ("Early Detection, Prevention and Treatment of Malocclusion"), and Dr. V. Everett Hunt ("Office Management and Investments"). The meeting was adjourned at 12:30 P.M.

NORTHERN COMPONENT

The Northern Component's June 13-14 meeting was conducted at Harrison Hot Springs Resort in British Columbia. Members of the Central and Southern Components of the P. C. S. O. were invited to attend that meeting. Dr. Morris Stoner of Indianapolis was the chief guest speaker, and his subject was entitled "Force Control."

Southwestern Society of Orthodontists

The fortieth annual meeting of the Southwestern Society of Orthodontists will be held at the Town House Hotel in Kansas City, Kansas, Sept. 25 to 28, 1960. A program outline follows.

Sunday, September 25

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| 9 A.M. to 5 P.M. | Registration, Town House Hotel Lobby. |
| 8:30 A.M. | Golf Tournament, Milburn Country Club. |
| 8:30 A.M. | Skeet Tournament, Elliott Shooting Park. |
| 6 to 8 P.M. | Reception, Town House Hotel. |

Monday, September 26

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| 8:30 A.M. | Registration, Lower Lobby. |
| 9 A.M. | Meeting called to order by John W. Richmond, President, Southwestern Society of Orthodontists. |
| 10 A.M. | ORTHODONTIC TREATMENT PLANNING. William L. Wilson, Boston, Massachusetts. |

- 12 Noon Luncheon and Business Meeting (*Members Only*).
- 2 P.M. Presentation of the Martin Dewey Memorial Award of the Southwestern Society of Orthodontists.
Presiding: J. Victor Benton and Marion A. Flesher.
Recipients: H. Carlyle Pollock, Sr., St. Louis, Missouri, and William B. Stevenson, Amarillo, Texas.
- 3 P.M. USE OF LABIAL-LOOP-LINGUAL APPLIANCE, CLASS II CASES.
William L. Wilson, Boston, Massachusetts.
- 8 P.M. Group Baseball Game. Kansas City Athletics versus Cleveland Indians. (Transportation provided.)

Tuesday, September 27

- 9 A.M. PROSTHODONTIC-ORTHODONTIC PROCEDURES INVOLVED IN CLEFT PALATE REHABILITATION. Arthur F. Lindquist, Jr., School of Dentistry, The University of Kansas City, Kansas City, Missouri.
- 10 A.M. A DENTAL EDUCATOR VIEWS ORTHODONTIC EDUCATION. Hamilton B. G. Robinson, Dean, School of Dentistry, The University of Kansas City, Kansas City, Missouri.
- 11 A.M. USE OF LABIAL-LOOP-LINGUAL APPLIANCE, CLASS III BORDERLINE CASES. William L. Wilson, Boston, Massachusetts.
- 12 Noon Luncheon (*Members Only*).
- 2 P.M. PROBLEMS AND PITFALLS IN ORTHODONTIC TREATMENT. William L. Wilson, Boston, Massachusetts.
- 3 P.M. Open Discussion.
- 6:30 P.M. Reception and Dinner Dance Honoring President and Mrs. John W. Richmond.

Wednesday, September 28

- 8 A.M. Breakfast, Business Meeting, and Installation of Officers.
- 9:30 A.M. General Table Clinics (progressive attendance).
- 11:30 A.M. Adjournment. Board of Directors meeting immediately following adjournment.

Ladies' entertainment will include a luncheon on Tuesday, September 27, at the famous Nelson Art Gallery and Atkins Museum, with a guided tour of the Galleries. Transportation will be provided from the Town House Hotel.

American Dental Association*

PROVINCE OF ALBERTA APPROVES NEW TYPE OF DENTAL AUXILIARIES ACT

At the latest session, the legislature of the province of Alberta, Canada, enacted a bill establishing a new type of dental auxiliary. In the act, a dental auxiliary is defined as "a person other than a dentist who is trained to perform the dental services specified in the regulations as being services that a licensed dental auxiliary may perform in the province." Although the act does not spell out the actual services which may be rendered, it is expected that in the regulations the auxiliary will be authorized to place fillings in cavities prepared by a dentist. The legislation provides, as well, that the province may establish schools for the training of these dental auxiliaries through agreement with the University of Alberta, and may prescribe the qualifications for admission to such schools, the course required, fees to be charged, and practice experience to be attained. An advisory

*From the ADA *Newsletter*, June 15, 1960.

committee is to be formed which will establish a register for the dental auxiliaries and issue an annual license. Under the act, the dental auxiliaries shall render services "under the supervision or direction of a dentist, who is at all times responsible for the services. . . ." It is further provided that "no dental auxiliary shall charge or collect directly from the public any fee for dental auxiliary service."

ADA URGES PASSAGE OF AID-TO-EDUCATION PROPOSALS IN TESTIMONY

Substantial increases are urgently needed in both government and private funds to support construction of new dental schools and expansion of existing facilities, ADA representatives said June 6 in testifying before the House of Representatives subcommittee on health and safety. Presenting testimony for the Association were Dr. Francis Herz, San Francisco, vice-chairman of the Council on Legislation, and Dr. Lester Burket, Philadelphia, dean of the University of Pennsylvania School of Dentistry and chairman of the Council on Dental Therapeutics. Dr. Burket reported on a recent study indicating that, in order to maintain the present dentist-population ratio, the equivalent of 22 new dental schools would be needed by 1975. He pointed out that more than \$100 million was needed in the next five years for expansion and rehabilitation of existing schools and an additional \$50 million in the next ten years for construction of new schools. "There are definite plans to establish two new dental schools within the next two years and reasonable assurance that an additional seven or eight schools will be put into operation within the next ten years," he reported. New schools are definitely planned, he said, in Kentucky and California, and are being considered in South Carolina, Oklahoma, New York, Connecticut, Colorado, Florida, Ohio, and possibly Utah. In addition to the bill for a grant-in-aid program for construction and improvement of schools (HR-6906), the committee considered two other measures: financial aid to qualified students and institutional research grants to dental schools. The Association supported all three measures.

SENATE COMMITTEE REPORTS FAVORABLY ON SELF-EMPLOYED PENSION BILL

The Senate Finance Committee on June 9 approved 12 to 5 a bill permitting the nation's 10,000,000 self-employed, including dentists to set up tax-deductible pension plans for themselves. In making the favorable report, the committee accepted many restrictions proposed by the Treasury on the self-employed pension bill, the Keogh bill, which the House has passed. Total cost of the bill approved by the Senate group is estimated by the Treasury as \$150-\$250 millions annually in revenue losses. Senator Harry Byrd (D-Va.), committee chairman, said he hoped the measure could be brought to the Senate floor by June 17. Opponents of the legislation expect to resume their opposition there. A lengthy debate could doom the bill because Congress is anxious to clear its docket and adjourn before the political conventions begin in mid-July.

Under the terms of the House bill, a self-employed person would be allowed to put 10 per cent of his income, up to \$2,500 a year, into a tax-deductible pension fund, which could not exceed \$50,000. He would pay income tax on it when he drew upon the fund at retirement, but normally the tax rate then would be lower than when the money was earned. The Senate committee bill has introduced several changes in this approach: (1) the self-employed person would have to set up a pension plan for his employees in order to get benefits himself; all employees with more than three years' service would have to be included; (2) the self-employed person could use only earned income, not investment income, in figuring the amount he could put into the pension plan; and (3) self-employed persons over the age of 50 at the time the bill became law would not be allowed to put in larger amounts, as in the House-approved bill.

COUNCIL TO RECOMMEND CONTINUATION OF SPECIALTY MORATORIUM

The Council on Dental Education will recommend that the House of Delegates reaffirm its approval of the presently recognized seven specialty areas. At the same time the

Council will recommend that the moratorium on recognition of new specialties be continued for another year. The recommendations, which will be submitted to the House of Delegates in October, were adopted at the Council's meeting May 26-27, according to the chairman, Dr. H. S. Huxtable, Mineral Point, Wis. The Council also announced plans for a conference for late July to consider present and future areas of dental practice for which national certifying boards might be established. National dental groups concerned with areas of dental practice will be invited; dates will be announced at a later time. In other actions, the Council:

1. Adopted a statement on "requirements for the approval of a certification board for dental assistants," and a statement on "educational standards for dental assistant programs." Both statements will be submitted to the House of Delegates for approval.
2. Announced plans for a Workshop on Education of Dental Students in the Proper Use of Chairside Dental Assistants to be held Sept. 13-15 in the Central Office.
3. Approved in principle the idea of a national board examination for dental hygienists and recommended that if such a plan becomes a reality it be operated by the Council of the National Board of Dental Examiners.
4. Discussed plans for an expanded recruitment program in 1961 to interest more students in dental careers.

NAME ADA DELEGATION TO FDI SESSION

Dr. Paul H. Jeserich, ADA president, has announced the names of the ADA delegates and alternates to the 48th annual session of the Fédération Dentaire Internationale. The session will be held June 20-25 in Dublin, Ireland. Delegates are appointed by the Board of Trustees, alternates by the president. The complete delegation follows:

Delegates: Drs. Paul H. Jeserich, Ann Arbor, Mich.; Charles H. Patton, Philadelphia; Gerald D. Timmons, Philadelphia; Obed H. Moen, Watertown, Wisconsin; Harold Hillenbrand, Chicago;

Alternates: Drs. LeRoy M. Ennis, Philadelphia; Steve A. Garrett, Atlanta, Ga.; Percy C. Lowery, Detroit; D. Lynn Openshaw, Los Angeles; Walter J. Pelton, Washington, D. C.

SPECIAL AREAS CONFERENCE PRONOUNCED SUCCESS

Participants in the Conference of National Organizations for Areas of Dental Practice pronounced the meeting a success and were in accord in suggesting a similar conference be held in 1961. Ninety representatives of some 40 national organizations attended the June 2-3 conclave as participants or observers. Held in Chicago, the meeting was co-chaired by Sec. Harold Hillenbrand and Dr. John S. Eilar, ADA Trustee and head of a special Board of Trustees committee on affiliated groups. Talks were given by the chairmen; by Dr. Harry Lyons, dean of the School of Dentistry, Medical College of Virginia; Dr. Harry J. Healey, past president of the American Association of Endodontists; Dr. Frederick A. Henny, president of the American Society of Oral Surgeons; and by Council Secretaries and Bureau heads from the ADA Central Office.

Flying Dentists Association

On June 4 and 5, 1960, twenty-nine dentists flew into Amarillo, Texas, for the sole purpose of organizing the Flying Dentists Association. They came from California, Pennsylvania, Illinois, Colorado, Indiana, Kansas, Oklahoma, New Mexico, Tennessee, Arizona, Arkansas, and Texas. An official name was adopted, an emblem was selected, and a very workable constitution and by-laws was worked out.

The twenty-nine dentists who flew into Amarillo on June 4, 1960, will be founder members. All those who become members before the next annual meeting in June, 1961, will be charter members. Those who join the group thereafter will be regular members. To become a member, one must have a dental degree and hold a valid pilot's certificate.

The following officers were elected:

President, Bill Stevenson, Jr., Amarillo, Texas.

Secretary-Treasurer, John Austin, Amarillo, Texas.

Lancaster Cleft Palate Clinic

The Lancaster Cleft Palate Clinic announces that a seminar in diagnosis, research, and treatment of individuals with oral-facial-speech handicaps will be held Oct. 31 to Nov. 3, 1960. Members of the dental, medical, and speech professions may obtain applications by writing to Dr. M. Mazaheri, Chief, Dental Services, Lancaster Cleft Palate Clinic, 24 North Lime St., Lancaster, Pennsylvania.

Evanston Dentists Honor Charles R. Baker*

On May 23, the Evanston Association of Dentists provided evidence that there are times when a prophet is, in fact, *with* honor in his own hometown. The occasion was a purely local event to pay tribute to Evanston's revered Charles R. Baker on the publication day of his book, *A History of the Evanston Association of Dentists*. It was not a formal affair; instead, it was a friendly, intimate—even homey—meeting, such as is called for when old and close friends get together to honor a beloved senior citizen who is respected locally as much as he is acclaimed nationally.

In keeping with the unpretentious nature of this surprise gathering for Dr. Baker, there were but two speakers. What they had to say expresses the informal and friendly character of the event. In the first, Dr. Baker's long-time friend, Dr. I. A. Smothers, described the unique nature of the independent Evanston Association of Dentists and told of the problems that Dr. Baker confronted in writing its history. Dr. Smothers' remarks follow:

"When 35 or 40 men meet for lunch week after week, doing the same job, sharing the same problems, the hopes, the joys, and the failures, and when they have been meeting thus for around forty-five years, all of this does something to them, and what it does is good.

"This has happened to us in Evanston. What a unique group this association of Evanston dentists is! Those who continually attend are the Regulars, and not one of them would give it up. Those who attend less frequently are the Irregulars, and they also share in help received and in help given. A few never attend. We hope that they will, at the least, become Irregulars, because as time passes on the Irregulars become Regulars.

"Acquaintance rapidly develops into friendship. And friendships become hallowed by memory.

"Memory has a terrific impact on one's life. And so, to preserve memory, we have records and we have MINUTES. And what minutes! Barrels of them, well-written, poorly-written, often illegible, occasionally neatly typed (what a boon!), more often scrawled and sometimes dateless. But together they comprise the very history of our lives together.

*The Evanston, Illinois, Association of Dentists recently paid tribute to one of its pioneers and stalwarts. His name is Charles R. Baker, the inspiration and chairman of the Golden Anniversary Luncheons of the American Association of Orthodontists. Many readers of the AMERICAN JOURNAL OF ORTHODONTICS will be happy to read the account of this affair written by B. F. Dewel of Evanston, Illinois.

"Who but Charlie Baker, the duly elected historian of our Association, could have performed the impossible and made order out of chaos? Nearly every organization chooses an historian. Generally all that he does is store the records away in some sort of safe or unsafe keeping. But Charlie Baker took his job seriously. It was a fortunate event when he became historian, because Charlie—the meticulous, the impeccable, the competent, and faithful Charlie—collected, sorted, deciphered, reconstructed, agonized, conferred, hunted, and slaved over the records. The job required years to complete. He never gave up and so, toiling for endless hours, he came up finally with the whole mass of material rounded into shape. He himself typed it all and put it into the form which you now see in this book, because this volume is a true photographic reproduction of his own copy.

"The product of such a labor could not be left to gather dust upon a shelf. Therefore, the Association has produced this book in order that it will never be lost and that each of us may have his own copy.

"So, Charlie Baker, our hats are off to you. Yours has been a service which money could not buy. May the love and gratitude which we have for you repay you in small part for your labors on our behalf."

The second speaker, B. F. Dewel, continued the friendly, informal tone of the testimonial luncheon with a brief review of Dr. Baker's achievements during a lifetime devoted to dentistry. Dr. Dewel's comments follow:

"You may be sure that I find it a most agreeable privilege to take part in a meeting to pay tribute to our good friend, Charlie Baker. Charlie precedes all of us here in Evanston; he has been around so long and has been so loyal and faithful that we have been guilty of just taking him for granted. Today is going to be different. We are going to show him the honor and respect and acclaim that a highly respected senior member of every organization should have at all times.

"Why should this come to pass at this particular time? The direct cause is the publication of his history of the Evanston Association of Dentists; yet, there also arose a spontaneous desire to honor the man who has done so much for dentistry. How many of you know, for example, that Charlie was president of the Chicago Dental Society back in 1932, and that during the same year he was also president of the American Association of Orthodontists? Ten years later he was president of the American Board of Orthodontics after having served as its secretary for six long years, and again during the same year was also president of the Central Section of the American Association of Orthodontists.

"These were not simply posts of honor; they were working jobs that called for ability and integrity and devotion. If there was any honor attached to them, Charlie paid little attention to it. He probably did not even realize he had been chosen because responsible men knew he was capable and that he could be depended upon to manage the affairs of these various organizations with justice and dignity. Long, hard work on more than 200 committees testified to his fine ability.

"But Charlie's work has by no means been confined to the political arena. One of his major achievements was the establishment of the graduate course in orthodontics in 1923 at Northwestern. This was at a time when graduate departments were virtually unknown in any dental school. Charlie started as demonstrator in orthodontics at Northwestern in 1904. He was in complete charge of all the orthodontic cases and spent three half-days a week for five calendar years without a vacation. His salary: \$20.00 a month, or about \$1.65 each half-day. He progressed upward to instructor, assistant professor, associate professor and ultimately to full professor. It was not until twenty-five years later, in 1929, that he resigned from his teaching responsibilities at Northwestern. Rarely has any school had such a fine teacher and such a loyal alumnus.

"Meanwhile, he had given numerous clinics and read many formal papers. His first paper was on 'The Deciduous Molars and Their Relation to the Development of the Jaws.' It and later studies on the same subject are considered to be classics in orthodontic literature. There were sixty or more of these papers on orthodontics, and thirty of them have been

published in dental journals. Charlie has had a consistent interest in professional literature; for many years he has been sectional editor of the *AMERICAN JOURNAL OF ORTHODONTICS*. Earlier he was editor of the *Northwestern Dental Journal* and an associate editor of the *Chicago Dental Society Bulletin*. Through the years he has also accumulated one of the finest private dental libraries in the country.

"Now about his other accomplishments. If any of you need a competent stenographer, call on Charlie; he completed the course at the Chicago Business College in 1894. His record is 180 dictated letters in one day. If you want to send a telegram, call on Charlie; he was a capable telegraph operator at the age of 13. If you want to start a rock-and-roll orchestra, call on Charlie; he played first violin after taking lessons at the Chicago Musical College. If you want a switchman on your small-gauge railroad, call on Charlie; he was responsible for five switch lamps on the Pennsylvania Railroad at the age of 12. If you want a presidential guard and usher, call on Charlie; he served in that capacity at a public reception for President McKinley and got to shake hand with the President. If you want the 1903 junior lecture on materia medica or the senior lectures on pathology, call on Charlie; during these years he transcribed the lectures for the school and thereby helped finance his education.

"Meanwhile, he found time to graduate, along with 190 others, and he took first place in his class at the same time. The first person to call him 'Dr. Baker' was Dean G. V. Black. He received his dental license the next day, recorded it, and went directly to his first office in Riverdale. There, he found a mother with three or four children waiting for him. After he had extracted about a dozen deciduous teeth, the mother caught him off guard and asked, 'How much?' Charlie gulped, collected 75 cents, and was in practice.

"It has not been possible to list all Charlie's achievements in the time available during a noon-hour luncheon. For example, his work in the Northwestern Dental School Alumni Association, in the American College of Dentists, and in Omicron Kappa Upsilon, and his activities as a charter member of both the Evanston Association of Dentists and the Chicago Association of Orthodontists. All of these have been noteworthy projects, and it should be a source of gratification to him to have seen their progress during his fifty-two years in Evanston.

"Finally, the highest honor granted by the American Association of Orthodontists is known as the Albert H. Ketcham Memorial Award. Only twenty-three men have received this distinction, and the man we know so affectionately as 'Charlie' is one of them. The Evanston Association of Dentists has no similar award, and none is needed, for Charlie already occupies that position of honor and respect in our thoughts and in our hearts."

A. D. A. Urges Postponement of Action on Health Care for Aged

The American Dental Association on July 1 warned the Senate Finance Committee to proceed with caution on proposals for health care of the aged.

In a statement filed with the committee, the Association called for full hearings and careful study of such proposals and stated that this could not be accomplished in the "hectic atmosphere of the few remaining days of Congress and in the heat of the Presidential and Congressional election campaigns."

"The Association believes the Finance Committee will make a serious and irretrievable mistake if it departs in this instance from the traditional and sound legislative procedure of reporting important legislation only after there have been full hearings," the statement said.

Association officials pointed out that they had been notified of the hearings only one day in advance and had then been offered "only a few minutes' time to present the views of an organization representing approximately 100,000 dental practitioners."

The Association urged the committee to withhold action on the proposals until after the White House Conference on Aging scheduled for January, 1961.

"It would appear to this Association that to take action now on far-reaching and irreversible federal programs dealing with the very subject to be taken up by the 1961 Conference would be entirely inconsistent with the previous [Congressional] action."

The Association statement pointed out that the Conference had been approved by Congress to "make recommendations for a course of positive action in dealing with the problems of aging."

"The American Dental Association strongly recommends, therefore, that the Finance Committee not act upon new aged health care programs until it has had an opportunity to hold comprehensive hearings and to review the proceedings and recommendations that will be forthcoming from the 1961 White House Conference on Aging," the statement concluded.

Notes of Interest

Robert Scott Lahr, D.D.S., announces the opening of his office at Toco Hills Doctors Building, 2910 North Druid Hills Rd. N. E., Atlanta, Georgia, practice limited to orthodontics.

Martin J. Mayeau, D.D.S., 111 West Wesley St., Wheaton, Illinois, announces the partnership of Mark J. Mayeau, D.D.S., M.S., practice limited to orthodontics.

A. C. Mogler, D.D.S., announces the removal of his office to Northland Medical Building, 150 Northland Shopping Center, Jennings, Missouri, practice limited to orthodontics.

David J. Stephen, D.D.S., M.S., announces the opening of his office, Suite 12, Shepard-Benning Building, Pleasant Street, Saint Joseph, Michigan, practice limited to orthodontics.

Forthcoming meetings of the American Association of Orthodontists:

1961—Denver Hilton Hotel, Denver, Colorado, April 16 to 21.

1962—Statler Hotel, Los Angeles, California, April 28 to May 3.

1963—Americana Hotel, Miami Beach, Florida, April 28 to May 2.

1964—Palmer House, Chicago, Illinois, May 10 to 14.

1965—Dallas Statler-Hilton, Dallas, Texas, April 25 to 30.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and its component societies. The Editorial Board of the JOURNAL is composed of a representative of each of the component societies.

American Association of Orthodontists

(Next meeting April 16-21, 1961, Denver)

President, William R. Humphrey - - - - - Republic Bldg., Denver, Colo.
President-Elect, Dallas McCauley - - - - - 410 S. Beverly Dr., Beverly Hills, Calif.
Vice-President, Cecil G. Muller - - - - - 101 S. 35th Ave., Omaha, Neb.
Secretary-Treasurer, Earl E. Shepard - - - - - 225 South Meramec, Clayton, Mo.

Central Section of the American Association of Orthodontists

(Next meeting Sept. 18-20, 1960, St. Louis)

President, Leo B. Lundergan - - - - - 8000 Bonhomme Ave., St. Louis, Mo.
Secretary-Treasurer, Kenneth E. Holland - - - - - 1019 Sharp Bldg., Lincoln, Neb.
Director, Elmer F. Bay - - - - - 216 Medical Arts Bldg., Omaha, Neb.

Great Lakes Society of Orthodontists

(Next meeting Nov. 27-30, 1960, Cincinnati)

President, Hunter I. Miller - - - - - 1416 Mott Foundation Bldg., Flint, Mich.
Secretary, Edward A. Cheney - - - - - 1201 Bank of Lansing Bldg., Lansing, Mich.
Director, Harlow L. Shehan - - - - - 601 Jackson City Bank Bldg., Jackson, Mich.

Middle Atlantic Society of Orthodontists

(Next meeting Oct. 9-11, 1960, Atlantic City)

President, Kyrle W. Preis - - - - - 700 Cathedral St., Baltimore, Md.
Secretary-Treasurer, Charles S. Jonas - - - - - Mayfair Apts., Atlantic City, N. J.
Director, Louis E. Yerkes - - - - - 825 Linden Ave., Allentown, Pa.

Northeastern Society of Orthodontists

(Next meeting Nov. 14 and 15, 1960, Boston)

President, Henry C. Beebe - - - - - 60 Charlesgate West, Boston, Mass.
Secretary-Treasurer, David Mossberg - - - - - 36 Central Park S., New York, N. Y.
Director, Norman J. Hillyer - - - - - 230 Hilton Ave., Hempstead, L. I., N. Y.

Pacific Coast Society of Orthodontists

(Next meeting Aug. 6-10, 1961, Seattle)

President, E. Allen Bishop - - - - - 703 Cobb Bldg., Seattle, Wash.
Secretary-Treasurer, Warren A. Kitchen - - - - - 2037 Irving St., San Francisco, Calif.
Director, William S. Smith - - - - - 2530 Bissell Ave., Richmond, Calif.

Rocky Mountain Society of Orthodontists

(Next meeting Sept. 25-28, 1960, Santa Fe)

President, William A. Blueher - - - - - 801 Encino Pl., Albuquerque, N. M.
Secretary-Treasurer, E. H. Mullinax - - - - - 8790 W. Colfax, Lakewood, Colo.
Director, Ernest T. Klein - - - - - 707 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

President, M. D. Edwards - - - - - 132 Adams St., Montgomery, Ala.
Secretary-Treasurer, William H. Oliver - - - - - 1915 Broadway, Nashville, Tenn.
Director, Boyd W. Tarpley - - - - - 2118 Fourteenth Ave., S., Birmingham, Ala.

Southwestern Society of Orthodontists

(Next meeting Sept. 25-28, 1960, Kansas City, Kan.)

President, John W. Richmond - - - - - 493 Brotherhood Bldg., Kansas City, Kan.
Secretary-Treasurer, Tom M. Matthews - - - - - 8215 Westchester Dr., Dallas, Texas
Director, Nathan Gaston - - - - - 701 Walnut St., Monroe, La.

American Board of Orthodontics

(Next meeting April 10-15, 1961, Denver)

President, Wendell L. Wylie - - - - - University of California School of Dentistry,
San Francisco, Calif.
Vice-President, J. A. Salzmann - - - - - 654 Madison Ave., New York, N. Y.
Secretary, Alton W. Moore - - - - - University of Washington School of Dentistry, Seattle, Wash.
Treasurer, Paul V. Reid - - - - - 1501 Medical Arts Bldg., Philadelphia, Pa.
Historian, B. F. Dewel - - - - - 708 Church St., Evanston, Ill.
Director, Frank P. Bowyer - - - - - 608 Medical Arts Bldg., Knoxville, Tenn.
Director, Nathan G. Gaston - - - - - 701 Walnut St., Monroe, La.